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By-Balin, Howard; And Others
Cross-Media Evaluation of Color T.V., Black and White T.V. and Color Photography in the Teaching of Endoscopy. Appendix A, Sample Schedule; Appendix B, Testing; Appendix C, Scripts; Appendix D, Analyses of Covariance.
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Based on the premise that in situations where the subject requires visual identification, where students cannot see the subject physically from the standpoint of the instructor, and where there is a high dramatic impact, color and television might be significant factors in learning, a comparative evaluation was made of: color television, black and white television, color film, and conventional methods, in the study of the female organs as viewed through an endoscope. The comparison was also based on the hypotheses that color television would prove superior to black and white television in a case such as this where color is vital to identification and diagnosis, and that color television would be more effective than color films because its "live" character would heighten the drama of the subject matter. After three years of testing, the conclusion was that there were no significant differences in learning among the four groups of students tested, and that, to decide whether or not to use television or film in the classroom, considerations other than those of teaching effectiveness must prevail. Appendices detailing the tests used are provided. (GO)

ED031083

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Cross-Media Evaluation of Color T.V., Black and White T.V., and Color Photography in the Teaching of Endoscopy

Prepared For the U.S. Office of Education

by

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University of Pennsylvania Hospital

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T.V. OR FILM?

AN ACCOUNT OF RESEARCH IN THE MEDICAL SCHOOL SETTING

For many years now, ever since closed-circuit T.V. has been a reality, there have been numerous educational studies comparing its educational effectiveness with other instructional means, notably the face-to-face lecture. The results have been disappointing to educators who had hoped to develop clear-cut findings about the relative merits or demerits of this medium. Rarely does one method show statistically significant superiority over another and even when this does occur, sometimes one, sometimes another looks better.[1]

Part of the difficulty has been in establishing effective experimental designs and maintaining, in the academic environment, adequate controls over the variables which constantly intrude to vitiate these designs. But beyond that it has become recognized that T.V. is but a medium for presentation of information -- a teaching tool if you will -- which can be used wisely or unwisely, effectively or ineffectively. And just as some surgeons have preferences for, and greater skill with certain types of instruments than other surgeons, so a teacher (e.g., of medicine) will find some media more to his liking than others. And, in teaching, the well known "Hawthorne" effect, in which changes may be due more to the enthusiasm generated by new approaches than to the approach per se, operates as strongly as in industry.

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[1] (See MacLennan, D.W. and Reid, J.C. Abstracts of Research on Instructional Television and Film: An Annotated Bibliography. Stanford, California: Institute for Communication Research, Stanford University, 1964.

Accordingly, the decision to use television in teaching should generally rest on other grounds than teaching effectiveness. The most commonly recognized grounds are: the ability to teach a widened audience, which may be located in any number of places; the ability to present a visual viewpoint not otherwise available to the majority of viewers; and through the use of video tape, to provide storage of the picture for later viewing and to allow for instantaneous playback of significant events.

With these four points as justifications, many schools, including medical schools, have decided that closed-circuit T.V. is worth the candle and have installed T.V. systems in their teaching and operating areas.

In making this decision, however, medical educators have been faced with other questions for which no ready answers are available. Among those questions are:

1. Couldn't I do just as well with a movie projector and some rented films? The arguments for this are persuasive, especially in light of today's rapidly escalating costs Films are often of better visual quality and much cheaper than T.V.; and because of easy editing they tend to provide better organization of the subject matters than T.V. Moreover, color filming is far simpler and less expensive than color T.V. production. Yet films lack the immediacy, the drama of T.V., as well as T.V.'s ability to capture the unexpected.

2. Is color a significant factor in the learning? Our intuition tells us it is, at least in those areas where color is important to identification or diagnosis. Yet, it may not be a significant contributor to overall learning, and if not, it is hard to justify the expense of the relative technical complexity of a color system as opposed to a black and white one.

3. Can color T.V. operate in the light levels I wish to use? Or am I constrained by this to the use of film?

It was to address such problems that the study reported here was undertaken. Our purpose was to examine the relative effectiveness of color film, color T.V., and black and white T.V. in a setting designed to bring out the most favorable aspects of color T.V.

The conditions under which such a study might be expected to succeed are as follows:

1. A subject matter area in which visual identification (including color identification) was relatively important was required.

2. A situation in which students could not readily share the instructor's (physical) viewpoint was preferred.

3. A situation having high dramatic impact.

In other words, a technology for presenting the visual material to the students should be not only desirable, but necessary.

These two requirements seemed to be suitably met in the practice of culdoscopy, the viewing of the female pelvic organs through a pelvic endoscope, entering the abdominal cavity through the cul-de-sac of Douglas. Because of the nature of the endoscope, the visual picture of any single patient can only be brought to groups of students by way of films or T.V., and since color is often an important element in identification and diagnosis, the first criterion seems to be met.

Our hypotheses were: (1) color T.V. will prove superior to black and white T.V., in this case where color is a key factor in identification and diagnosis; and (2) color T.V. will prove superior to color films because of its "live" character which should promote greater interest and heighten the drama of the learning situation.

The design for this study established three groups of subjects (S's). One group (C) would view the interior of the pelvis via color television, a second group (BW) would simultaneously view the same picture on a black and white television screen, while the third group (F) would see the material at a later date on color film. The later date was necessary to allow for processing of the film which was to be shot immediately following the T.V. presentation.

Later, for reasons to be outlined below, we decided to use film and to transfer the film to video tape, presenting the video taped program as though it were live. In this way, content was kept identical for all three presentations. Any differences in tested outcomes could thus be attributed directly to the different media or indirectly to them by virtue of the questions they stimulated or the study which they prompted.

T.V. INSTRUMENTATION

The instrumentation and techniques involved in the project may be broadly categorized into two distinct areas: that used the first year of the project;and that evolved for the second and third year's work. The first involved direct live closed circuit color and black and white T.V. presentations from the operating room and conference room to the students in the teaching auditorium, whereas the ensuing years involved replay of color T.V. tapes and live audio communication between a remote tape location and the teaching classroom and instructor. In each case the concept of presenting a live demonstration was preserved and carried out successfully.

The equipment involved in the first year's effort included a miniature color T.V. closed circuit system under development by the CBS Laboratories, and commercially available fiber optic culdoscopic equipment. The color T.V. system which CBS was developing is based upon the sequential system for which they hold patents. Their laboratory has had under development for a number of years a miniature version of such a camera having a small tricolor rotating disc in front of a single vidicon camera which is then synchronized with the rotating discs in front of appropriately modified black and white T.V. monitors at the observing location. Initial experimentation as to the adequacy of light availability from the source for the T.V. system as well as checking out the transmitting system and monitors was performed on pelvic models. Indications from such experimentation were that although somewhat borderline, a reasonable live demonstration was achievable from the human pelvic cavity with the system as it existed. As will be noted, numerous problems ensued which resulted in modifications of the protocol to that used in the ensuing years. As previously indicated, the camera was relatively small, weighing approximately ten pounds and having a rectangular shape. Adaptors were fabricated allowing direct connection of a commercially available culdoscope to the camera lens. The culdoscope was one employing fiber optics as a light carrying medium and standard optics for the return image. The single one inch vidicon within the camera had a small rotating disc ahead of it with panels of appropriate red, blue and green filters inserted. The signal from the camera was in no way modified in an attempt to convert to NTSC standards, but was cable fed as a closed circuit system to monitors several floors below the operating room in the teaching auditorium. Sufficient monitors were placed in the auditorium at appropriate locations such that groups of twelve to fifteen students could gather around an individual unit and observe the proceedings. Fourteen inch high resolution monitors were employed for this purpose and modified appropriately. Large rotating discs were placed in front of each monitor with the appropriate red, blue and green filter panels whose rotation was synchronized with that within the T.V. camera, thereby reproducing the color effect produced at the camera location. There was, in addition, a two-way audio system employed between the operating room and the student location so that they might hear exactly what was occuring within the operating room as well as specific comments from the several physicians who were observing the procedure within the operating room. A specific effort was made to multiplex several audio channels into the communications system to the students, not only so that could they receive comments from the physician performing the procedure, but would also hear discussion from the physician observing. The two-way channel allowed questions from the students at the appropriate time after the procedure but while the investigators were still within the operating room. This two-way dialogue aided in creating the effect in the students of direct participation in a live operating room procedure. After each operating procedure, the several investigators and observing physicians gathered in a small conference room to discuss the case. This was televised directly over the same cable with both audio and video channels to the students who remained in the auditorium. A similar procedure was followed for the black and white T.V. group except that black and white monitors were used. The remaining system was identical. As previously indicated, problems ensued with the color system in that it was found that camera sensitivity had not been developed to the point where sufficient light was available from the commercially purchased light source when the entire system was placed in vivo. Although video information was available to some extent, its color and outline distinctions became very questionable and its role as a teaching technique to supercede any previous or existing techniques was clearly unsuitable in this format and required further development. As a result of this experience it was felt that the camera system, light source and light carrying medium must all be further developed to obtain acceptable picture quality. For this reason, the protocol for the ensuing years was changed while development work continued under separate in-house funding to increase camera sensitivity, increase light source outputs without endangering patient welfare and to increase the efficiency of the light and image carrying medium of the culdoscope. These efforts were continued and carried out in parallel with the altered investigative protocol which was used in the following years.

Method -- First Year (1965 - 1966)

Third year medical students of the University of Pennsylvania participated in our first year study. This group of students was considered as relatively homogenous, since all members were initially highly selected and had been uniformly exposed to the same basic course in anatomy and physiology. One hundred and five students were randomly assigned to three groups:

1. Color T.V. group
2. Black and white T.V. group
3. Motion picture group

The research procedure followed the original proposal.

A series of one-hour lectures in the related subjects of gynecological or reproductive physiology was delivered before and between the culdoscopic demonstrations (see Appendix A). During these lectures, conventional teaching aids, such as slides, drawings and film strips were used at lecturer's option. Four live broadcasts of culdoscopic examinations were attempted for the color and black and white T.V. groups. Immediately following each demonstration, which was about thirty minutes, a T.V. panel discussion of thirty minutes by the culdoscopist and other gynecologists was staged in a room adjacent to the operating room. Students in the remote classroom also participated in the discussion by audio-communication. The content of the discussion was related to the case demonstrated in an earlier session. Culdoscopic demonstration as well as the panel discussion was recorded on 16 mm color, sound film and presented to the motion picture group one week later.

A pre-test was given at the beginning of instruction to all subjects in those areas of gynecology and obstetrics which would subsequently be relevant to the pelvic findings obtainable via culdoscopy. A copy of the pre-test items is appended (Appendix #B). Scores on this preliminary test served as the covariable in the later analysis of covariance.

One week after terminal instructions, the first post-test was administered. This examination emphasized the culdoscopic findings and their relationship to pelvic anatomy, physiology and pathology.

Test items for the post-test were constructed especially for this research. They consist 37 per cent of visual materials which related to the pelvic findings observed through the culdoscope. The remaining items covered the lecture materials as well as the contents of the panel discussions. No prior item statistics were available for these test items. Therefore, the test results from the first year were utilized for item analysis and necessary changes were made for the second and third year research. (See Appendix B for test construction.)

Second and Third Year (1966 - 1968)

As indicated above and in our previous reports, our first year's effort failed to provide significant data, due to an unfortunate sequence of equipment failure. It did yield, however, an understanding of the technology in T.V. equipment and culdoscopic film preparation and an analysis of test items for the second and third year's use.

In view of the disadvantage of a live T.V. demonstration, well prepared studio filming was utilized for the second and third year research. The teaching material was well organized and prepared for the filming. Scripts were written to maintain its spontaneity as would exist on live T.V. Four films were prepared by a professional producer (Ralph Lopatin Productions).

The topics were:

#1 Stein - Levinthal Syndrome
#2 Induction of Ovulation
#3 Endometriosis
#4 Follicular Cystosis

(See Appendix C for scripts. Films are also submitted under separate cover.)

Through the courtesy of local T.V. station (WCAU), the movie films were faultlessly transcribed into color T.V. video tapes which were played back by a comercially available truck-mounted T.V. video tape machine through both color and black and white monitors.

The films were specially produced motion picture films using an actual operating room scene and continuous cinematography as seen through the culdoscope in routine patient procedures. They began with an explanation of the procedures, a demonstration of the equipment, views of the operating room and the miniature T.V. camera as it is attached to the culdoscope and appropriate placement of the equipment.

Next came a discussion of the individual case to be presented showing charts of symptomology, possible pathological conditions and differential diagnoses. At this point the physician began his examination and the view was switched from the panning camera to the (previously collected) culdoscopic film with simultaneous "spontaneous" comments by the culdoscopist.

The tapes made from the movie film were high band color and of broadcast quality. They were replayed on a studio quality ampex recorder remotely located from the teaching room and cable fed to two monitors within the teaching area. Careful effort was made to match the audio tone and intensity of the direct two-way communication from the physician with that of his voice on the actual tape from the operating room. In this manner, the demonstrations were acceptable by the students as live presentations from the operating room.

Due to curriculum changes in the medical school, the participants for second and third year research were drawn from the junior classes of Jefferson Medical College and Women's Medical College of Philadelphia. Students in the junior classes rotated through the OB-GYN Department;

therefore, it was not possible to run the groups concurrently as in the first year. However, this did not pose problems, since the "canned" presentations insured identical content for all experimental groups.

The second year of research was conducted in Jefferson Medical College. The junior class was divided into four groups instead of three as in the first year, thus adding a "control" group taught by conventional methods without supplementary culdoscopic T.V. or film demonstration. Pre- and post-tests were administered to all groups according to the schedule in Appendix A.

Each group of students was assigned to the OB-GYN Department for four half-hour sessions of special instruction with prepared video tapes (shown in color or black and white), motion pictures or conventional lecture. (See Appendix A.) For the simulated "live" T.V. broadcast, the video tape was played in a rented T.V. truck. Between the classroom and the T.V. truck, there was audio communication. Pre-operative conversation and post-operative discussion were carried out "live" between the students and the culdoscopist (operator) through the relay of a proctor in the classroom.

In designing these procedural changes, special care was taken to avoid contamination between groups. The T.V. groups saw the shows first, thus enabling us to preserve the fiction that the film groups were seeing only what their classmates had seen earlier, and that the films were reruns of the earlier T.V. presentations transcribed to film. No one questioned this, and in only two cases in the second year were we even asked whether the T.V. was "live," a fact which we (falsely) affirmed. This fiction was effectively preserved by the presence of a large mobile T.V. truck conspicuously placed outside the building when the T.V. shows were presented. This truck housed the video-type equipment, but could just as easily have been used to relay a closed-circuit T.V. signal via a micro-wave relay. No one questioned the technology; in fact, there was a complete lack of interest in it on the part of the S's.

The third year of our research was carried out at Women's Medical College of Philadelphia. A total of thirty-seven junior students participated in the study and were divided into four groups, as in the second year. Research protocol identical to that in the second year research was followed.

Results:

In the first year a series of unfortunate equipment failures in several pieces of equipment prevented the collection of useful data from any of the groups. Despite this, pre- and post-tests were administered on schedule and yielded useful information on item characteristics and necessary changes were made for the second and third year research. (See Appendix B for test construction.)

An analysis of covariance was performed for each year's results, using pre-test scores for the covariate and post-test scores as the dependent variable.

Means and standard deviations for the second year's results are shown in Table 1. The analysis of covariance for this data is shown in Table 2. Similar statistics for the third year are shown in Tables 3 and 4. An analysis of covariance for the combined groups is shown in Table 5.

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR GROUPS AND TOTALS - YEAR II

Group	N	Pre-Test		Post-Test	
		M	σ	M	σ
Control	23	29.2	5.3	28.3	5.1
Color T.V.	23	29.3	4.5	30.9	3.0
Black and White T.V.	21	31.7	4.2	29.4	4.2
Film	24	29.0	5.8	30.6	4.3
Total	91	29.8	5.2	30.3	4.2

TABLE 2

SOURCE	DF	YY	SUM-SQUARES (DUE)	ADJUSTED SUB-SQUARES (ABOUT	DF	MEAN-SQUARE
TREATMENT (BETWEEN)	2	93.9375				
ERROR (WITHIN)	87	1658.6250	230.1761	1428.4487	86	16.6099
TREATMENT + ERROR (TOTAL)	90	1752.5625	206.0228	1546.5396	89	
DIFFERENCE FOR TESTING ADJUSTED TREATMENT MEANS...				118.0908	3	39.3636

NULL HYPOTHESIS. NO DIFFERENCE AMONG TREATMENTS AFTER ADJUSTING WITH COVARIATES.

F(3, 86) = 2.370 N.S. (5% LEVEL)

TABLE 3

MEANS AND STANDARD DEVIATIONS FOR GROUPS AND TOTALS - YEAR III

Group	N	Pre-Test		Post-Test	
		M	σ	M	σ
Control	10	29.9	5.2	26.8	4.9
Color T.V.	10	27.3	6.2	28.5	4.9
Black and White T.V.	9	32.0	2.9	30.4	4.6
Film	8	20.8	4.4	29.9	4.9
Total	37	29.8	5.6	38.8	5.0

TABLE 4

ANALYSIS OF COVARIANCE TABLE

SOURCE	DF	YY	SUM-SQUARES (DUE)	SUM-SQUARES (ABOUT)	DF	MEAN-SQUARE
TREATMENT (BETWEEN)	3	74.4766				
ERROR (WITHIN)	33	819.1992	39.5499	779.6492	32	23.3640
TREATMENT + ERROR (TOTAL)	36	893.6758	54.6770	838.9985	35	
DIFFERENCE FOR TESTING ADJUSTED TREATMENT MEANS...				59.3494	3	19.7831

NULL HYPOTHESIS. NO DIFFERENCE AMONG TREATMENTS AFTER ADJUSTING WITH COVARIATES.

F(3, 32) = 0.812 N.S. (5% level)

TABLE 5

ANALYSIS OF COVARIANCE TABLE

SOURCE	DF	YY	SUM-SQUARES (DUE)	SUB-SQUARES (ABOUT)	DF	MEAN-SQUARE
TREATMENT (BETWEEN)	3	130.2500				
ERROR (WITHIN)	124	2543.5625	270.1079	2273.4546	123	18.4834
TREATMENT + ERROR (TOTAL)	127	2673.8125	256.3105	2417.5020	126	
DIFFERENCE FOR TESTING ADJUSTED TREATMENT MEANS...				144.0474	3	48.0158

NULL HYPOTHESIS. NO DIFFERENCE AMONG TREATMENTS AFTER ADJUSTING WITH COVARIATES.

F(3, 123) = 2.598 N.S. (5% level)

As a result of these analyses the tests were revised and abridged.

The test scores for the second and third years were submitted to a one-way analysis of covariance, using pre-test scores as the covariate and scores from post-test A as the dependent variable. Tables 2, 4 and 5 summarize these analyses. The F ratios fall short of significance at the 5% level. In short, we were unable to demonstrate any significant differences between the groups.

Group means are shown in Tables 1 and 3. As can be seen, no apparent trends developed.

Discussion:

The failure to establish even a consistent trend in the data was, frankly, disappointing. For the utilization of visual material which the students are unlikely to get any other source as the subject matter for testing, and the use of visual testing material should favor the more effective method of visual presentation. That no such differences arose, lends further support to the accumulating evidence that there is no significant advantage of one form of visual presentation over another, and that the decision to utilize T.V. (or films, for that matter) in education must rest on other grounds than pedagogical effectiveness.

Certain shortcomings in our controls which almost inivitably crop up in educational experimentation doubtless reduced the sensitivity of our measurement. But the exposure of the several groups was virtually identical except for the experimental variables and if differences of any practical size had existed, they should have appeared.

Should it be desired to repeat this experiment in this or another context, it would be well to take note of a number of controls which it would be desirable to implement, but which we were powerless to do anything about in the operating environment in which we worked.

1. The principal investigator could not retain control of the full course, only a portion of it. While other instructors were cooperative, the exposure of the S's to other aspects of the course was not completely uniform.

2. The numbers of available subjects continued to dwindle from year to year and went far beyond any reasonable expectation as courses were changed from "required" to "elective" status.

3. The failure to maintain a fairly stable identified population made it impossible to refine the measuring instruments to the degree desired. One or two full groups should be used for pre-testing the instruments.

4. It developed that there was less visual content which could be used for testing in the subject matter area than was originally expected. While there are many pathological conditions which can be revealed visually through culdoscopy, one can reasonably expect to find only a few of them in a limited number of examinations. Thus the visual content is extensive rather than intensive and this limited the amount of visual testing possible. That this was not clear in the beginning was due to our lack of experience.

5. The subjects were much more heterogeneous than had been supposed, both with respect to their medical background, and with respect to their learning skills. The amount of covariance was therefore small, and sensitivity of our testing thereby reduced. It would, we believe in retrospect, be better to give but one post-test, and the identical instrument as a pre-test despite its specialized content. For practical reasons we consider it unwise to give the same test three times. Any such use of retesting with the same instrument must, of course, be provided with precautions to prevent the knowledge of such retesting being passed from group to group and thus confounding the results.

Since no significant differences between media were demonstrated, we must reaffirm our earlier statement that the decision to use T.V. or films in the classroom must rest on grounds other than pedogogical effectiveness. We believe that these other considerations should properly play the dominant role in making such decisions. Each medium has distinct advantages and disadvantages. These are summarized in the following.

First of all, both T.V. and moving picture films provide motion which is advantageous not only with subjects which move, but are also helpful when the field of view is small and it is desired to show the relative positioning of various parts of the total scene. Moreover, both may be used remotely, presenting a scene the viewers could otherwise not see. T.V. also has these advantages:

1. It can be shown "live." We have failed to demonstrate that this is an advantage in the ordinary teaching situation, but where the ongoing character of the presentation may be assumed to be of central importance, this may then be a significant factor.

2. T.V., via its video tape recording capability, can be used to provide "instant playback," an important factor when something unexpected has happened. Films, on the other hand, must be processed before viewing, a matter of several days at best, if color film is used.

3. T.V. can provide instant feedback, giving not only evidence that the picture is in fact being properly recorded, but also providing a guide for ongoing modification of the program.

4. T.V. is adapted better than film to presenting the picture to large audiences simultaneously in multiple locations.

5. T.V. can also provide a brighter image than film, thus permitting its use with the lights on.

On the other hand, T.V. has some disadvantages:

1. Cost. The costs of T.V. for equipment, production and tape duplicating can run quite high.

2. Image. The image is generally small and is never as sharp as on the best films. If pictures are in color, the quality of the

color is usually poorer than on film.

3. Editing of a video taped production is extremely difficult and requires special skill.

TABLE 6

SUMMARIES OF ADVANTAGES AND DISADVANTAGES

	Color Film	Color T.V.	Black and White T.V.
Image			
Size	Large	Small	Small
Clarity	Excellent	Good	Good
Color fidelity	Good	Fair	Not applicable
Cost			
Production	Moderate	High	Low
Recording equipment	Low	High	Low
Duplication	Moderate	High	Low
Projection (receiving)	Low	Moderate	Low
"Live" or "Canned"	Canned	Either	Either
Instant feedback	No	Yes	Yes
Instant reply	No	Yes	Yes
Audience dispersal	Impractical	Practical	Practical
Ease of editing	Easy	Difficult	Difficult
Brightness of viewing room	Dark	Light	Light
Retrospective Narration	Easy	(Impossible for "live" show (Moderately difficult for "Canned	
Time delay for processing	Long	None required	None required

Conclusion:

Despite the selection of a situation designed to enable color T.V. to show to best advantage, a comparison with black and white T.V., and with color films failed to demonstrate a significant advantage for any one medium. It is therefore concluded that the decision to invest in T.V. as a medium of instruction must rest on other than pedagogical grounds. The bases for such a decision are reviewed.

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Appendices to:

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Grant No. O.E. 7-48-9030-288

Pennsylvania Hospital
Philadelphia, Pennsylvania

EM007152

Appendix A - Sample Schedule
Appendix B - Testing
Appendix C - Scripts
Appendix D - Analyses of Covariance

APPENDIX A

SAMPLE SCHEDULE

SCHEDULE FOR HEW EFFORT

Schedule 3 - Programs and Related Tests

Day	Date	Person	
Friday	9 Dec. 66	Mayfield Fromm	Pre-test to Block 3, 3:00 P.M., Jefferson
Friday	6 Jan. 67	Mayfield Fromm	Post-test No. 1 to Block-3, 3:00 P.M., Jefferson
Friday	20 Jan. 67	Mayfield Fromm	Post-test No. 2 to Block-3, 3:00 P.M. Jefferson
Friday	27 Jan. 67	Mayfield Fromm	Pre-test to Block-4, 3:00 P.M., Jefferson
Friday	3 Feb. 67	Fromm	Film No. 1, 1:30 P.M., Block-4, Jefferson Film No. 2, 3:00 P.M., Block-4, Jefferson
Friday	10 Feb. 67	Fromm	Film No. 3, 1:30 P.M., Block-4, Jefferson Film No. 4, 3:00 P.M., Block-4, Jefferson
Friday	17 Feb. 67	Fromm Mayfield	Post-test No. 1, 3:00 P.M., Block-4, Jefferson
Friday	3 Mar. 67	Fromm Mayfield	Post-test No. 2, 3:00 P.M., Block-4, Jefferson
Friday	10 Mar. 67	Fromm Mayfield	Pre-test to Block-5, 3:00 P.M., Jefferson
Friday	17 Mar. 67	Fromm Goodman Balin	B & W TV No. 3 to Block-5, 1:30 P.M., Jefferson B & W TV No. 1 to Block-5, 3:00 P.M., Jefferson
Thursday	22-4 Mar 67	Fromm Goodman Balin	B & W TV No. 4 to Block-5, 1:30 P.M., Jefferson B & W TV No. 2 to Block-5, 3:00 P.M., Jefferson
Friday	31 Mar. 67	Fromm Mayfield	Post-test No. 1 to Block-5, 3:00 P.M., Jefferson
Friday	14 Apr. 67	Fromm Mayfield	Post-test No. 2 to Block-5, 3:00 P.M., Jefferson
Friday	21 Apr. 67	Fromm Mayfield	Pre-test No. 1 to Block 6, 3:00 P.M., Jefferson

Day	Date	Person	
Friday	28 Apr. 67	Fromm Goodman Balin	Color TV No. 2 to Block-6, 1:30 P.M., Jefferson Color TV No. 3 to Block-6, 3:00 P.M., Jefferson
Friday	5 May 67	Fromm Balin Goodman	Color TV No. 4 to Block-6, 1:30 P.M., Jefferson Color TV No. 1 to Block-6, 3:30 P.M., Jefferson
Friday	12 May 67	Fromm Mayfield	Post-test No. 1 to Block-6, 3:00 P.M., Jefferson
Friday	26 May 67	Fromm Mayfield	Post-test No. 2 to Block-6, 3:00 P.M., Jefferson

APPENDIX B

TEST CONSTRUCTION

The conditions under which these tests were constructed have been described in the body of this report. Both pre and post tests for the first year had 100 items, all that could be administered in the time available.

Items of a general character covering the subject matter expected to be mastered by the beginning of the course of instruction were included in the pretest. The principal subject matter areas covered were:

1. Obstetrics
2. Fertility
3. Pelvic anatomy, physiology and pathology
4. Genetics
5. Gynecology

The post test-included items on pelvic anatomy, physiology and pathology drawn from the content of the films and associated lectures. Subjects included as item content are summarized in table B-1.

Material from the post-test was not included in the pretest because its highly specific content made it unlikely any students would have prior knowledge of it, and it would not have served as appropriate pre-test material.

Items for the pre-test were taken in part from pools of standarized test items and in part from unstandardized sources. Some of the standardized items were rewritten to correct particular alternatives which had earlier failed to discriminate. All items were of the multiple choice type.

The post-test consisted of two types of items. The first were items dependent upon visual recognition of pelvic findings as shown in colored culdoscopic photographs. The second type consisted of multiple choice items based upon the material used in the culdoscopic presentations.

For the second and third years, these tests were abridged in order to fit them into available time periods as well as to eliminate unsuitable items as revealed by the item analyses of our first year results.

For the first year, both the pre and the post-tests contained 100 items; their abridged forms used in the second and third years contained 60 items for the pre-test and 50 items for the post-tests.

The amount of suitable visual material for testing was restricted to what students could actually view in the culdoscopic presentations or what they could infer from such viewing.

TABLE B-1

1966-67

DISTRIBUTION OF ITEMS (SECOND YEAR POST-TEST)

	Contents	Number of Items	Item Numbers (as appears in the final draft)
I.	Genetics	2 (2 pairs)	#50, 51
II.	Embryology & Anatomy	6 (1 pair)	#1, 2, 9, 15, 30, 44
III.	Physiology of the Ovary	6 (1 pair)	#15, 24, 26, 34, 36, 46
IV.	Physiology of the Normal Menstrual Cycle	12 (1 pair)	#3, 4, 8, 10, 11, 12, 13, 16, 25, 29, 32, 43
V.	Puberty & Menarche	2 (1 also listed in Category III)	#35 (½ of #46 listed in III)
VI.	Syndrone of Ovarian Hypofunction	4	#6, 19, 20, 27
VII.	Syndrone of Ovarian Hyperfunction	2	#31, 37
VIII.	Disorder of Menstruation	1 (1 pair)	#42
IX.	Infertility	13 (2 pairs)	#5, 7, 17, 18, 21, 22, 23, 28, 39, 40, 41, 45, 47
X.	Menopause	1 (1 pair)	#49
XI.	Fertilization, Ovum Transport & Implantation	2 (1 pair)	#38, 48
	Total	50 (10 pairs)	

Table B-2 shows the reliabilities for the tests by groups and for the total. Item analysis summaries and copies of the pre and post-tests are included.

TABLE B-2

Reliabilities

Split half: (Odd-even split) Corrected by Spearman-Brown Prophecy formula.

	Pre-test	Post Test A
	Yr. 2	Yr. 2
Control	.587	.759
Film	.724	.620
B/W TV	.613	.378
Color TV	.471	.877
All	.644	.872

Test-retest reliability for the post-test was formed by correlating scores on Post-Test A with the comparable scores on Post-Test B. Since there were no significant differences between the groups, all groups were pooled. The resulting correlation was +0.512. This is interpretable as a test-retest reliability with a two week interval between tests.

PRETEST YEAR I

On the basis of the item analysis, this test was abridged and modified for the second and third years.

ANSWER SHEET

Place the letter corresponding to the alternative you have selected beside the number of each item. Please use CAPITAL letters. Answer sheet may be detached.

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January 12, 1966

This test reviews your knowledge and ability in areas related to certain aspects of GYNECOLOGY. It will be used to help us evaluate your level of understanding at the beginning of the course, thereby making our terminal evaluation more useful.

1. A 20-year-old multipara is menstruating regularly but seeks advice because her breasts are small and flat. Which of the following is indicated?

   (A) Oral estrogens
   (B) Parenteral estrogens
   (C) Estrogen and progesterone cyclically
   (D) Chorionic gonadotropins
   (E) None of the above

2. A patient who has experienced a mild abruptio placenta is found in the fourth stage of labor to have persistent bleeding. The indicated emergency hematological test is

   (A) fibrinogen determination
   (B) hematocrit
   (C) Rh determination
   (D) serum albumin determination
   (E) albumin-globulin ratio

3. Which of the following is NOT a primary indication for cesarean section?

   (A) Placenta praevia
   (B) Transverse lie
   (C) Heart disease
   (D) Disproportion
   (E) Abruptio placenta

4. An acute 5-centimeter postpartum perineal hematoma is characterized by

   (A) pain
   (B) shock
   (C) fever
   (D) Hemoglobinuria
   (E) Hemoglobinemia

5. Which of the following is most frequently associated with pyelonephritis of pregnancy?

(A) Urinary tract anomalies
(B) Improper personal hygiene
(C) Urinary stasis
(D) Urinary calculi
(E) Hemorrhagic cystitis

6. Puerperal infection is most effectively prevented by

(A) early ambulation
(B) routine prophylactic antibiotics
(C) elimination of tub baths during the last six weeks of pregnancy
(D) aseptic intrapartum technique
(E) rectal instead of vaginal examinations during labor

7. During early pregnancy, myomectomy is indicated

(A) if there is bladder pressure
(B) to prevent abortion
(C) if the myoma seems softer than it was prior to pregnancy
(D) If the myoma is pedunculated and torsion has occurred
(E) if bleeding occurs

8. The dorsal artery of the clitoris is a branch of the

(A) internal pudendal artery
(B) midsacral artery
(C) hemorrhoidal artery
(D) ovarian artery
(E) renal artery

9. A multipara at term has a living baby in a transverse lie, ruptured membranes, and a cervical dilation of 6 centimeters. The proper treatment is

(A) external version
(B) internal version
(C) cesarean section
(D) the use of a Voorhees' bag
(E) Dührssen's incisions

10. Bilateral polycystic ovaries found in a patient who has missed three menstrual periods and whose uterus extends 15 centimeters above the symphysis pubis suggest

(A) twin pregnancy
(B) fibromyomata and pregnancy
(C) Stein-Leventhal syndrome
(D) Turner's syndrome
(E) hydatidiform mole

11. Which of the following is the foremost cause of premature delivery?

(A) Urinary tract infection
(B) Multiparity
(C) Illegitimacy
(D) Repeat cesarean section
(E) Vigorous physical activity

12. Uterine bleeding produced by cyclic estrogen and progesterone therapy for primary amenorrhea usually results from

(A) stimulatinn of the pituitary
(B) initiation of ovulation
(C) hyperplasia of the endometrium
(D) withdrawal of hormones
(E) luteinization of the graafian follicle

13. The presence of papilllary excrescence on the outer surface of an ovarian cyst suggests

(A) Inflammation within the tumor
(B) That the tumor is pseudomucinous
(C) That the tumor may have malignant potentialities regardless of its microscopic appearance
(D) That the tumor may be tapped if care is used to avoid spillage
(E) Probable tuberculous origin

14. Administration of 2 units of oxytocin intramuscularly to a woman on the 4th postpartum day may be expected to produce

(A) Ejection of milk
(B) Involution of the uterus
(C) Cardiac irregularities
(D) Pseudopreeclampsia
(E) A reduction of venous pressure

15. At the time of hysterectomy for hydatiform mole, bilateral cystic ovaries may be found. They are

(A) Theca lutein cysts and will regress
(B) Follicular cysts and should be resected
(C) Cystic corpora lutea and should be enucleated
(D) Metastatic choriocarcinoma and should be removed surgically
(E) Potentially malignant and biopsy is indicated

16. Chancroid infection is caused by

(A) Donovan bodies
(B) Hemophilus ducreyi
(C) Symbiotic spirochetes and fusiform bacilli
(D) Herpes virus hominis
(E) Treponema

17. Bacteremic (septic) shock is frequently related to the liberation of

(A) An endotoxin
(B) An exotoxin
(C) A hemolysin
(D) An agglutinin
(E) An antihistamine

18. An early microscopic change in the endometrium following ovulation is

(A) A sudden increase in mitoses
(B) Nuclear karyorrhexis
(C) Edema
(D) Necrosis
(E) Basal vacuolation

19. Hydatidiform mole is a benign neoplasm of the

(A) Chorion
(B) Fetus
(C) Amnion
(D) Decidua vera
(E) Decidua capsularis

20. The most frequent complication of multiple pregnancy is

(A) Preeclamptic toxemia
(B) Placenta praevia
(C) Premature delivery
(D) Premature separation of the placenta
(E) Locked twins

21. The chief objective in the expectant management of placenta praevia is to

(A) Permit dilatation and effacement of the cervix
(B) Permit further maturity of the fetus before termination of the pregnancy
(C) Await engagement of the presenting part
(D) Allow thrombosis to occur in the bleeding sinuses
(E) Avoid cesarean section

22. Which of the following blood tests may be of specific value in the management of a primigravida with fetal death at 33 weeks gestation?

(A) Transaminase
(B) IDH (lactic dehydrogenase)
(C) Prothrombin
(D) Fibrinogen
(E) Coombs'

23. If a change in the blood fibrinogen level occurs following fetal death, the level would be expected to

(A) Fall immediately
(B) Increase immediately
(C) Fall gradually within 3 weeks of death
(D) Fall abruptly after 3 to 4 weeks of death
(E) Fall gradually after 3 to 4 weeks of death

24. Which of the following is the most definitive treatment of severe preeclampsia?

(A) Sodium restriction
(B) Administration of antihypertensive drugs
(C) Termination of pregnancy
(D) Hospitalization and sedation
(E) Administration of diuretics

25. The chorionic villi of a hydatid mole usually

(A) Are decreased in size
(B) Show stromal hyperplasia
(C) Have a vascular and cellular stroma
(D) Show increased trophoblastic proliferation
(E) Produce progesterone

In items 26 through 30 select the alternative (A through E) most closely associated with the items.

26. Chancroid

(A) Donovan bodies
(B) Bacillus crassus
(C) Ducrey's bacillus
(D) Treponema pallidum
(E) An unidentified virus

27. Condylomata lata

(A) Donovan bodies
(B) Bacillus crassus
(C) Ducrey's bacillus
(D) Treponema pallidum
(E) An unidentified virus

28. Condylomata acuminata

(A) Donovan bodies
(B) Bacillus crassus
(C) Ducrey's bacillus
(D) Treponema pallidum
(E) An unidentified virus

29. Granuloma inguinale

(A) Donovan bodies
(B) Bacillus crassus
(C) Ducrey's bacillus
(D) Treponema pallidum
(E) An unidentified virus

30. Ulcus vulvae acutum (Lipschutz disease)

(A) Donovan bodies
(B) Bacillus crassus
(C) Ducrey's bacillus
(D) Treponema pallidum
(E) An unidentified virus

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31. The stigma is a term applied to the

(A) Cornification of the vaginal mucosa
(B) Lower uterine segment
(C) Anterior lip of the cervix
(D) Intramural portion of the tube
(E) Point of ovulation

32. Which one of the following cytologic entities has the LEAST in common with the other four entities?

(A) Enlargement of the nucleus
(B) Hyperchromasia of the nucleus
(C) Clumping of chromatin
(D) Loss of nuclear-cytoplasmic ratio
(E) Presence of navicular cells

33. Which of the following structures are continuations of the broad ligament?

(A) The mesosalpinx, mesosigmoid, infundibulopelvic ligament, and mesovarium
(B) The mesosalpinx, mesosigmoid, and median umbilical ligament
(C) The mesovarium, infundibulopelvic ligament, and mesosigmoid
(D) The mesovarium, infundibulopelvic ligament, mesosalpinx, and parietal peritoneum of the lateral pelvic wall
(E) The infundibulopelvic ligament, mesosalpinx, lateral umbilical ligaments, and mesovarium

34. Parovarian cysts originate from

(A) The müllerian ducts
(B) The wolffian ducts
(C) The urogenital sinus
(D) Skene's ducts
(E) Stenson's ducts

35. Which of the following ovarian tumors has the greatest potential for malignant transformation?

(A) Dermoid cyst
(B) Fibroma
(C) Thecoma
(D) Serous cystadenoma
(E) Pseudomucinous cystadenoma

36. Which of the following ovarian tumors has NO known endocrine function?

(A) Luteoma
(B) Thecoma
(C) Dysgerminoma
(D) Granulosa cell tumor
(E) Arrhenoblastoma

37. A hydatid mole was evacuated 3 months ago. A strongly positive biologic test for pregnancy would now be positive proof of

(A) Choriocarcinoma
(B) Persistent hydatid mole
(C) Normal Pregnancy
(D) Resolving theca lutein cysts
(E) Chorionic gonadotropin

38. Which one of the following words describes the physiologic function of chorionic gonadotropin?

(A) Adrenergic
(B) Luteotrophic
(C) Ovigenic
(D) Estrogenic
(E) Thermogenic

(A) Uterine retroversion
(B) Gonorrheal salpingitis
(C) Bicornuate uterus
(D) Salpingitis isthmica nodosa
(E) Adenomyosis

Which of the antecedent abnormalities is suggested by each of the following?

39. Tubal pregnancy

40. Repeated abortion

41. Cornual interstitial pregnancy

42. Little effect on reproduction

43. Bleeding during pregnancy

(A) Frei test
(B) Stained smear for Donovan bodies
(C) Dark field examination of smear
(D) Stained smear for Ducrey's bacillus
(E) Biopsy

Which of the above tests is most definitive in the diagnosis of each of the following?

44. Condylomata lata

45. Condylomata acuminata

46. Granuloma inguinale

47. Chancroid

48. Lymphogranuloma inguinale

49. Recent studies suggest that which of the following is an effective method for inducing labor after intrauterine fetal death?

(A) Abdominal amniocentesis with instillation of sodium chloride solution
(B) Instillation of progesterone into the amniotic sac
(C) Slow intravenous infusion of ergonovine
(D) Intravenous drip of oxytocin, premarin, and calcium gluconate
(E) Relaxin therapy

50. Drainage of the ovarian veins is usually

(A) Directly into the inferior vena cava for both the right and the left ovarian veins
(B) Into the vena cava for the right ovarian vein and into the left renal for the left ovarian vein
(C) Into the right renal for the right ovarian vein and into the inferior vena cava for the left ovarian vein
(D) Into the right renal for the right ovarian vein and into the left renal for the left ovarian vein
(E) Directly into the iliac venics for both the right and the left ovarian veins

51. Radioactive iodine (I-131) should not be used in pregnancy because it

(A) Is of no value
(B) Produces hyperplasia of the fetal thyroid
(C) Is concentrated in fetal thyroid after the 13th week
(D) May produce abortion
(E) Is damaging to the mother's thyroid

52. Hirsutism in the female

(A) Is indicative of elevated urinary 17-ketosteroids
(B) Is a constant finding in arrhenoblastoma
(C) Is diagnostic of the polycystic ovarian syndrome
(D) Is diagnostic of an endocrinopathy
(E) May have no correlation with level of urinary 17-ketosteroids

In items 53 through 57 select the alternative (A through E) most closely associated with the item.

53. Occurs in young women, usually regarded as malignant; has no hormonal function

(A) Krukenberg's tumor
(B) Dysgerminoma
(C) Brenner tumor
(D) Granulosa-theca cell tumor
(E) Gynandroblastoma

54. Small, benign, fibrous stroma with epithelial masses resembling transitional epithelium

(A) Krukenberg's tumor
(B) Dysgerminoma
(C) Brenner tumor
(D) Granulosa-theca cell tumor
(E) Gynandroblastoma

55. Identical to seminoma of the testes

(A) Krukenberg's tumor
(B) Dysgerminoma
(C) Brenner tumor
(D) Granulosa-theca cell tumor
(E) Gynandroblastoma

56. Solid ovarian tumor, frequently associated with abnormal uterine bleeding, considered malignant, hormone-producing

(A) Krukenberg's tumor
(B) Dysgerminoma
(C) Brenner tumor
(D) Granulosa-theca cell tumor
(E) Gynandroblastoma

57. Its cells may be arranged in the form of follicles, columns, or rosettes.

(A) Krukenberg's tumor
(B) Dysgerminoma
(C) Brenner tumor
(D) Granulosa-theca cell tumor
(E) Gynandroblastoma

58. The most important direct support of the uterus comes from the

(A) Round ligaments and the adnexa
(B) Round ligaments and the uterosacral ligaments
(C) Round ligaments and the bases of the broad ligaments
(D) Bases of the broad ligaments and the uterosacral ligaments
(E) Subvesical fascia and the levator ani muscles

59. Which of the following is LEAST capable of transfer across the placenta to the fetal circulation?

(A) Glucose
(B) Amino acids
(C) Sodium pentothal
(D) Penicillin
(E) Maternal plasma proteins

60. The level (milligrams per cent) of serum fibrinogen below which coagulation defects may first appear is approximately

(A) 50
(B) 100
(C) 200
(D) 300
(E) 400

61. In obstetrics, the generalized Schwartzman reaction is usually related to

(A) ABO incompatibility
(B) Rh isoimmunization
(C) Penicillin reaction
(D) Bacterial endotoxin
(E) Cold agglutinins

In items 62 through 66 select the alternative (A through E) most closely associated with the item.

62. Sometimes called the thecal gland

(A) Diffuse hyperthecosis
(B) Theca lutein cysts
(C) Theca externa
(D) Theca interna
(E) Thecoma

63. Associated with highlevels of chorionic gonadotropin

(A) Diffuse hyperthecosis
(B) Theca lutein cysts
(C) Theca externa
(D) Theca interna
(E) Thecoma

64. May be associated with defeminization

(A) Diffuse hyperthecosis
(B) Theca lutein cysts
(C) Theca externa
(D) Theca interna
(E) Thecoma

65. A part of the normal corpus luteum

(A) Diffuse hyperthecosis
(B) Theca lutein cysts
(C) Decidual cells
(D) Theca interna
(E) Thecoma

66. A feminizing mesenchymoma

(A) Diffuse hyperthecosis
(B) Theca lutein cysts
(C) Theca externa
(D) Theca interna
(E) Thecoma

67. Pinard's maneuver is useful in

(A) Releasing a nuchal arm
(B) Flexion of the head
(C) Rotation of the shoulders
(D) Release of pressure on the umbilical cord
(E) Flexion of the leg

68. Which of the following will NOT inhibit ovulation in the normally menstruating female?

(A) Diethylstilbestrol 5 mg/day
(B) Norethynodrel (the major consituent of Enovid) 10-20 mg/day
(C) Conjugated estrone sulfate 7.5 mg/day
(D) Norethindrone (norlutin) 10 mg/day
(E) Progesterone 5 mg/day

69. The normally fertilized human ovum usually resides within the oviduct for approximately

(A) 3 minutes
(B) 3 hours
(C) 1 day
(D) 3 days
(E) 10 days

70. The so-called "post maturity" syndrome is associated with

(A) an oversized fetus
(B) a large, meaty placenta like that seen in syphilis
(C) a fetus of normal or "less than" normal size with scaly skin
(D) a markedly undersized fetus
(E) fetal splenomegaly

71. Of the following, the most frequent cause of death during the first 3 days of anuria, following acute renal failure in the obstetric patient is

(A) overhydration
(B) hyperkalemia
(C) uremia
(D) anemia
(E) acute pituitary necrosis

72. An untreated patient with severe puerperal infection (pelvic cellulitis, peritonitis, and thrombophlebitis) repeatedly shows negative blood cultures. Which of the following is probably the offending organism?

(A) Escherichia coli
(B) Staphylococcus albus
(C) Streptococcus viridans
(D) Clostridium welchii
(E) Streptococcus anaerobius

73. Estrogen is produced during the proliferative phase of the menstrual cycle, chiefly by which of the following?

(A) The discus proligerus
(B) The primordial follicle
(C) The ovarian stroma
(D) The theca interna
(E) None of the above

74. Experimental work strongly supports which of the following as a cause of endometriosis?

(A) Sampson's theory
(B) Metaplasia
(C) A hereditary factor
(D) Adrenocortical hyperplasia
(E) Lymphatic metastasis

75. In sickle cell anemia

(A) Sickle cells contain an abnormal type of hemoglobin
(B) The osmotic fragility is increased
(C) The cells sickle particularly in the arterial blood
(D) Sickling is augmented by the exclusion of CO_2
(E) Sickle cells have a normal life span

In items 76 through 82 select the alternative (A through E) most closely associated with the item.

76. Wide sacrum with loss of curvature

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

77. Wide, shallow sacrosciatic notches

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

78. Poliomyelitis at 6 years of age

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

79. Bilateral sacro-iliac osteoarthritis

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

80. Scoliosis

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

81. Converging lateral bore

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

82. Anterior (parietal) asynclitism

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

83. Ovum pick-up by the fallopian tube depends on the presence of

(A) Progesterone
(B) Fimbria
(C) Oxytocin
(D) Spermatozoa
(E) None of the above

In items 84 through 88 select the alternative (A through E) most closely associated with the item.

84. Approximately 5 per cent are anencephalic

(A) Transverse lie
(B) Face
(C) Breech
(D) Compound
(E) Brow

85. Uterus subseptus

(A) Transverse lie
(B) Face
(C) Breech
(D) Compound
(E) Brow

86. Extension of the legs is said to be etiologic factor

(A) Transverse lie
(B) Face
(C) Breech
(D) Compound
(E) Brow

87. Likely to deliver as either vertex or face presentation

(A) Transverse lie
(B) Face
(C) Breech
(D) Compound
(E) Brow

88. Conduplicato corpore

(A) Transverse lie
(B) Face
(C) Breech
(D) Compound
(E) Brow

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89. Which of the following is most frequently associated with polyhydramnios?

(A) Vasa praevia
(B) Circumvallate placenta
(C) Placenta succenturiata
(D) Chorio-angioma of the placenta
(E) Postmaturity syndrome

90. Postabortal endotoxic shock usually results from infection with

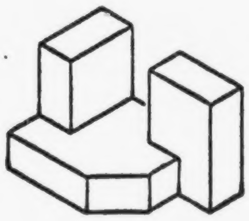
(A) Viruses
(B) Gram-negative organisms
(C) Micrococci
(D) Clostridium welchii
(E) Bacteroides

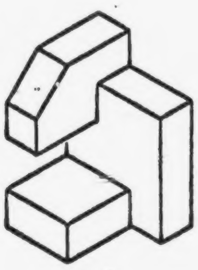
91. Which of the following complications in the pregnant diabetic has the most serious implications for the fetus?

(A) Hypoglycemic episodes
(B) Mild preeclampsia
(C) Excessive fetal size
(D) Increasing requirements for insulin
(E) Early appearance of hydramnios

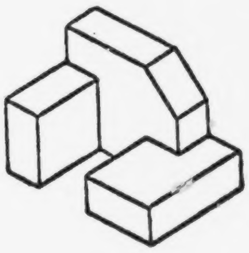
In the following items, indicate which of the three alternatives shows the same object as the numbered one on the left, but in a rotated position.

92.





(A)



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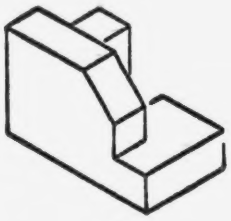

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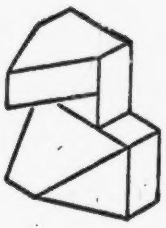

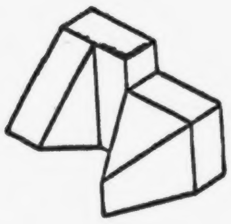

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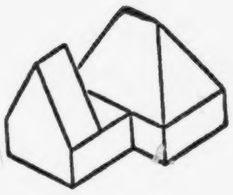

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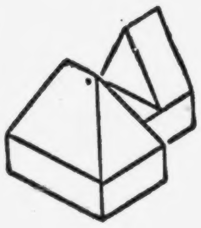

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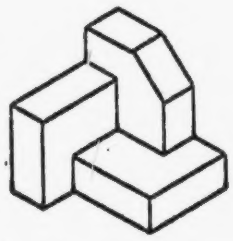

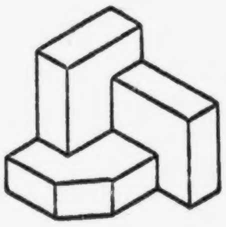

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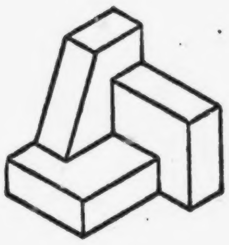

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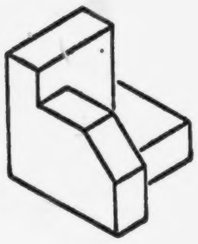

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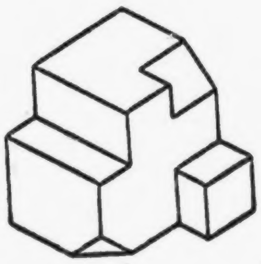

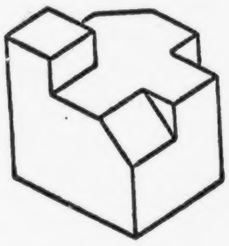

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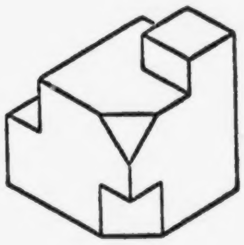

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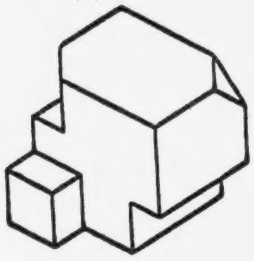

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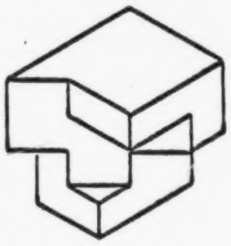

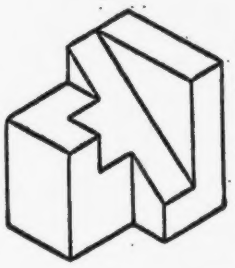

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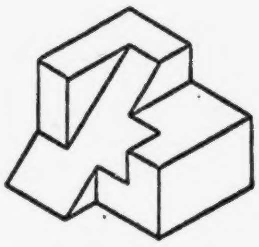

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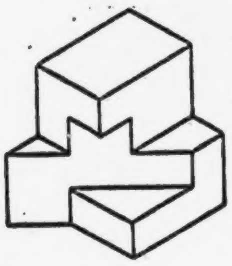

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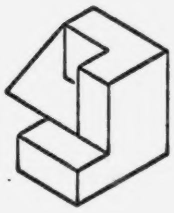

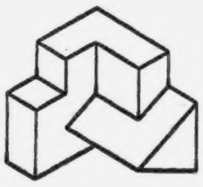

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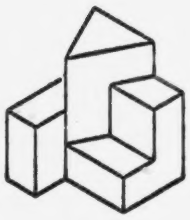

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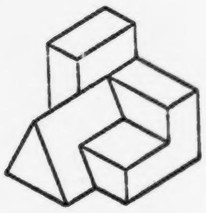

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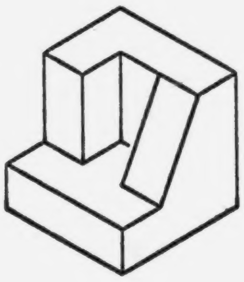

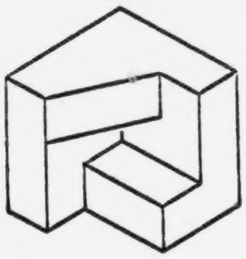

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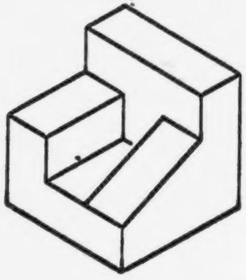

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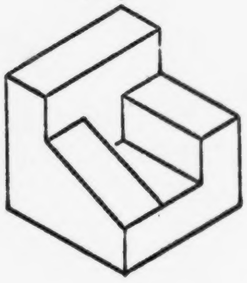

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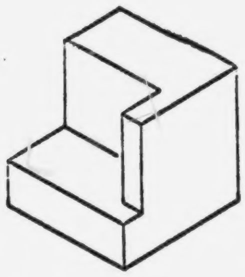

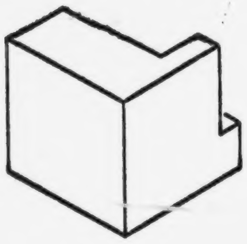

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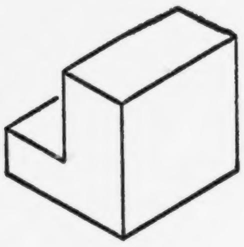

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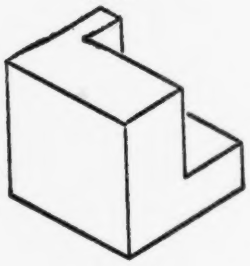

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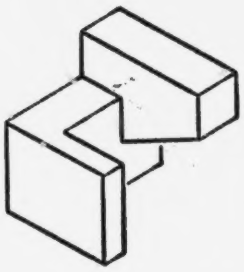

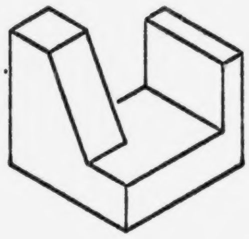

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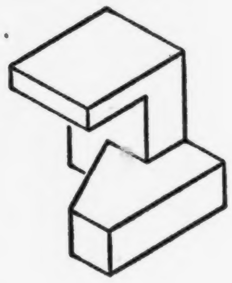

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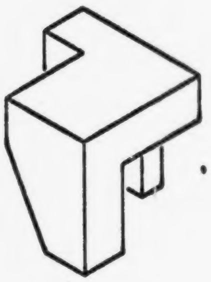

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PRETEST

Years 2&3

Name____

This test reviews your knowledge and ability in the areas related to certain aspects of GYNECOLOGY. It will be used to help us evaluate your level of understanding at the beginning of the block, thereby making our terminal evaluation more useful.

1. Place your name on this sheet and the ANSWER SHEET.
2. The examination is designed to take 30 minutes (two items per minute).
3. All answers must be entered in the appropriate space on the ANSWER SHEET. Do not write in this question book.
4. Enter only the ONE BEST ANSWER for each question.

1. Which of the following structures are continuations of the broad ligament?

   (A) The mesosalpinx, mesosigmoid, infundibulopelvic ligament, and mesovarium
   (B) The mesosalpinx, mesosigmoid, and median umbilical ligament
   (C) The mesovarium, infundibulopelvic ligament, and mesosigmoid
   (D) The mesovarium, infundibulopelvic ligament, mesosalpinx, and parietal peritoneum of the lateral pelvic wall
   (E) The infundibulopelvic ligament, mesosalpinx, lateral umbilical ligaments, and mesovarium

2. Which of the following is most frequently associated with polyhydramnios?

   (A) Vasa praevia
   (B) Circumvallate placenta
   (C) Placenta succenturiata
   (D) Chorio-angioma of the placenta
   (E) Postmaturity syndrome

3. Recent studies suggest that which of the following is an effective method for inducing labor after intra-uterine fetal death?

   (A) Abdominal amniocentesis with instillation of sodium chloride solution
   (B) Instillation of progesterone into the amniotic sac
   (C) Slow intravenous infusion of ergonovine
   (D) Intravenous drip of oxytocin, premarin, and calcium gluconate
   (E) Relaxin therapy

4. A 20-year-old multipara is menstruating regularly but seeks advice because her breasts are small and flat. Which of the following is indicated?

   (A) Oral estrogens
   (B) Parenteral estrogens
   (C) Estrogen and progesterone cyclically
   (D) Chorionic gonadotropins
   (E) None of the above

5. In obstetrics, the generalized Schwartzman reaction is usually related to

(A) ABO incompatibility
(B) Rh isoimmunization
(C) Penicillin reaction
(D) Bacterial endotoxin
(E) Cold agglutinins

6. The chief objective in the expectant management of placenta praevia is to

(A) Permit dilatation and effacement of the cervix
(B) Permit further maturity of the fetus before termination of the pregnancy
(C) Await engagement of the presenting part
(D) Allow thrombosis to occur in the bleeding sinuses
(E) Avoid cesarean section

7. Which of the following blood tests may be of specific value in the management of a primigravida with fetal death at 33 weeks gestation?

(A) Transaminase
(B) IDH (lactic dehydrogenase)
(C) Prothrombin
(D) Fibrinogen
(E) Coombs'

8. During early pregnancy, myomectomy is indicated

(A) if there is bladder pressure
(B) to prevent abortion
(C) if the myoma seems softer than it was prior to pregnancy
(D) If the myoma is pedunculated and torsion has occurred
(E) if bleeding occurs

9. The stigma is a term applied to the

(A) Cornification of the vaginal mucosa
(B) Lower uterine segment
(C) Anterior lip of the cervix
(D) Intramural portion of the tube
(E) Point of ovulation

10. Which one of the following cytologic entities has the LEAST in common with the other four entities?

(A) Enlargement of the nucleus
(B) Hyperchromasia of the nucleus
(C) Clumping of chromatin
(D) Loss of nuclear-cytoplasmic ratio
(E) Presence of navicular cells

11. An early microscopic change in the endometrium following ovulation is

(A) A sudden increase in mitoses
(B) Nuclear karyorrhexis
(C) Edema
(D) Necrosis
(E) Basal vacuolation

12. Which of tne following is the most definitive treatment of severe preeclampsia?

(A) Sodium restriction
(B) Administration of antihypertensive drugs
(C) Termination of pregnancy
(D) Hospitalization and sedation
(E) Administration of diuretics

13. The so-called "post maturity" syndrome is associated with

(A) an oversized fetus
(B) a large, meaty placenta like that seen in syphilis
(C) a fetus of normal or "less than" normal size with scaly skin
(D) a markedly undersized fetus
(E) fetal splenomegaly

14. Radioactive iodine (I-131) should not be used in pregnancy because it

(A) Is of no value
(B) Produces hyperplasia of the fetal thyroid
(C) Is concentrated in fetal thyroid after the 13th week
(D) May produce abortion
(E) Is damaging to the mother's thyroid

15. Parovarian cysts originate from

(A) The müllerian ducts
(B) The wolffian ducts
(C) The urogenital sinus
(D) Skene's ducts
(E) Stenson's ducts

16. The most important direct support of the uterus comes from the

(A) Round ligaments and the adnexa
(B) Round ligaments and the uterosacral ligaments
(C) Round ligaments and the bases of the broad ligaments
(D) Bases of the broad ligaments and the uterosacral ligaments
(E) Subvesical fascia and the levator ani muscles

17. Which of the following is LEAST capable of transfer across the placenta to the fetal circulation?

(A) Glucose
(B) Amino acids
(C) Sodium pentothal
(D) Penicillin
(E) Maternal plasma proteins

18. Uterine bleeding produced by cyclic estrogen and progesterone therapy for primary amenorrhea usually results from

(A) Stimulation of the pituitary
(B) Initiation of ovulation
(C) Hyperplasia of the endometrium
(D) Withdrawal of hormones
(E) Luteinization of the graafian follicle

19. The presence of papillary excrescence on the outer surface of an ovarian cyst suggests

(A) Inflammation within the tumor
(B) That the tumor is pseudomucinous
(C) That the tumor may have malignant potentialities regardless of its microscopic appearance
(D) That the tumor may be tapped if care is used to avoid spillage
(E) Probable tuberculous origin

20. Associated with highlevels of chorionic gonadotropin

(A) Diffuse hyperthecosis
(B) Theca lutein cysts
(C) Theca externa
(D) Theca interna
(E) Thecoma

21. Bilateral sacro-iliac osteoarthritis

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

22. Scoliosis

(A) Android
(B) Flat
(C) Anthropoid
(D) Robert
(E) Oblique

23. Tubal pregnancy suggests which of these antecedent abnormalities?

(A) Uterine retroversion
(B) Gonorrheal salpingitis
(C) Bicornuate uterus
(D) Salpingitis isthmica nodosa
(E) Adenomyosis

24. Which of the following ovarian tumors has NO known endocrine function?

(A) Luteoma
(B) Thecoma
(C) Dysgerminoma
(D) Granulosa cell tumor
(E) Arrhenoblastoma

25. Pinard's maneuver is useful in

(A) Releasing a nuchal arm
(B) Flexion of the head
(C) Rotation of the shoulders
(D) Release of pressure on the umbilical cord
(E) Flexion of the leg

26. Drainage of the ovarian veins is usually

(A) Directly into the inferior vena cava for both the right and the left ovarian veins
(B) Into the vena cava for the right ovarian vein and into the left renal for the left ovarian vein
(C) Into the right renal for the right ovarian vein and into the inferior vena cava for the left ovarian vein
(D) Into the right renal for the right ovarian vein and into the left renal for the left ovarian vein
(E) Directly into the iliac venics for both the right and the left ovarian veins

27. The onset of progesterone production is known to occur:

(A) Immediately prior to ovulation
(B) Immediately after ovulation
(C) After the corpus luteum is 24 hours old
(D) Three days after ovulation
(E) At some other time

28. The cavity (antrum) of the Graffian follicle is lined with a layer referred to as the:

(A) Membrana folliculosa
(B) Membrana granulosa
(C) Corona radiata
(D) Cumulus oophorus
(E) None of above

29. The developing follicle "gains competence" i.e., becomes responsive to endogenous pituitary gonadotropins:

(A) At a time when it is surrounded by one layer of granulosa cells
(B) When there are three layers of granulosa cells surrounding the ovum
(C) Shortly after the antrum (cavity) is formed
(D) After luteinization of the theca interna
(E) None of the above

30. Failure of withdrawal bleeding to occur following administration of adequate amounts of estrogen to an amenorrheic woman may indicate:

(A) A uterine factor
(B) Ovarian failure
(C) A pituitary factor
(D) A hypothalamic lesion
(E) An ovarian tumor

31. Withdrawal bleeding following administration of progesterone to an amenorrheic woman indicates:

(A) Gonadotropin production
(B) Endogenous estrogen production
(C) Absence of pregnancy
(D) All of the above
(E) None of the above

32. Pituitary gonadotropins can be inhibited by:

(A) Estrogen alone
(B) Progesterone alone
(C) A combination of estrogen and progesterone
(D) All of above
(E) None of above

33. Luteotrophic Hormone (LTH), if it exists in humans, has the following effects:

(A) Stimulates follicle maturation
(B) Causes ovulation
(C) Maintains the corpus luteum
(D) All of the above
(E) None of the above

34. At the time of ovulation the chromosomes of the ovum are:

(A) In metaphase, arranged on a mitotic spindle
(B) In prophase
(C) In anaphase
(D) Have completed mitosis
(E) None of the above

35. One of the main cytologic features that delineates estrogen effects on the vaginal mucosa is:

(A) Lysis of cells
(B) Cornification of cells
(C) Regression of cells
(D) Subnuclear vacuolization
(E) All of the above

36. The typical shift in basal body temperature associated with an ovulatory cycle consists of a:

(A) Temperature drop only
(B) Temperature rise only
(C) Temperature drop followed by a sustained temperature rise
(D) Temperature rise followed by a temperature drop
(E) None of above

37. It is thought that the mammalian ovum remains fertilizable for:

(A) 3 to 4 hours
(B) 4 to 8 hours
(C) 8 to 12 hours
(D) 12 to 24 hours
(E) 24 to 72 hours

38. At the time of implantation, the fertilized ovum has reached the:

(A) Morula stage
(B) Eight-cell stage
(C) Blastocyst stage
(D) Gastrula stage
(E) None of above

39. The most useful procedure for detecting the cause of infertility in a woman with normal ovarian function is:

(A) Protein-bound iodine
(B) Culdoscopy
(C) Basal metabolic rate
(D) Glucose tolerance test
(E) 17-ketosteroid assay

40. The human ovary at birth contains:

(A) No ova
(B) 400 to 600 ova
(C) 4,000 to 6,000 ova
(D) 400,000 to 600,000 ova
(E) Over 1,000,000 ova

41. The exact day of ovulation may be determined by daily:

(A) Basal temperature studies
(B) Urinary estrogen determination
(C) Pregnanedial determination
(D) All of the above
(E) None of the above

42. Ovarian Estrogen:

(A) Is produced only before ovulation
(B) Is a polypeptide
(C) Stimulates growth of Müllerian duct derivatives
(D) Inhibits uterine motility
(E) Maintains lactation

43. In most mammalian species, the fertilized ovum is retained in the Fallopian tube for approximately:

(A) 6 hours
(B) 12 hours
(C) 24 hours
(D) 48 hours
(E) 72 hours

44. The most frequent cause of amenorrhea in young adult women is:

(A) Primary ovarian failure
(B) Hypothyroidism
(C) Stein-Leventhal Syndrome
(D) Pregnancy
(E) Psychoneurosis

45. The following pubertal changes are influenced by estrogen:

(A) Epiphysial fusion
(B) Growth of bony pelvis
(C) Growth of breasts
(D) All of the above
(E) Only the growth of breasts and bony pelvis (B & C above)

46. The duration of activity of each successive corpus luteum is:

(A) 7 plus or minus 2 days
(B) 10 plus or minus 2 days
(C) 14 plus or minus 2 days
(D) 21 plus or minus 2 days
(E) Some other length of time

47. Which of the following is most likely to deliver as either vertex or face presentation:

(A) Transverse lie
(B) Face
(C) Breech
(D) Compound
(E) Brow

48. Which one of the following words describes the physiologic function of chorionic gonadotropin?

(A) Adrenergic
(B) Luteotrophic
(C) Progestational
(D) Estrogenic
(E) Thermogenic

49. Which of the following is not a primary indication for cesarean section?

(A) Placenta praevia
(B) Transverse lie
(C) Heart disease
(D) Disproportion (cephalo-pelvic)
(E) Abruptio placenta

50. The level (milligrams per cent) of serum fibrinogen below which coagulation defects may first appear is approximately:

(A) 50
(B) 100
(C) 200
(D) 300
(E) 400

51. Which of the following occurs in young women, is usually regarded as malignant, and has no hormonal function?

(A) Krukenberg's tumor
(B) Dysgerminoma
(C) Brenner tumor
(D) Granulosa-theca cell tumor
(E) Synandroblastoma

52. The currently available gonadotropic hormone FSH (pergonal) is extracted from:

(A) Urine of pregnant mare
(B) Urine of pregnant women
(C) Urine of menopausal women
(D) All of the above
(E) None of the above

53. The vaginal cytologic pattern of the menopausal female may show:

(A) Unopposed estrogen
(B) Intermediate proliferation
(C) Atrophic changes
(D) All of the above
(E) None of the above

54. The elevated PBI during pregnancy indicates:

(A) Hyperthyroidism
(B) Hypothyroidism
(C) Increased protein binding power
(D) Decreased protein binding power
(E) None of the above

55. The altered glucose metabolism during pregnancy is due to:

(A) Decreased insulin secretion
(B) Increased insulin secretion
(C) Decreased tissue utilization of insulin
(D) Increased tissue utilization of insulin
(E) None of the above

56. Which of the following syndromes does not present an aberration in total chromosonal number:

(A) Mongolism
(B) Gonadal agenesis (Turner Syndrome)
(C) Kleinfelter's Syndrome
(D) Feminizing testicular syndrome
(E) None of the above

57. In a 48-year-old female patient who complains of an irregular menstrual pattern, hot flashes, and sweating, the most likely etiology is:

(A) Depressed estrogen secretion
(B) Depressed FSH secretion
(C) Depressed hypothalamic FSH releasing factor
(D) All of the above
(E) None of the above

58. The sex chromatin pattern and gonadal structure are incompatible in which of the following conditions:

(A) Feminizing testicular syndrome
(B) Congenital adrenal hyperplasia
(C) Primary ovarian failure
(D) All of the above
(E) None of the above

59. The sex chromatin pattern and the phenotype are incompatible in the following condition:

(A) Gonadal agenesis (Turner Syndrome)
(B) Kleinfelter's Syndrome
(C) Feminizing testicular syndrome
(D) All of the above
(E) None of the above

60. Meiotic nondysjunction may play an etiological role in:

(A) Gonadal dysgenesis
(B) Kleinfelter's Syndrome
(C) Mongolism
(D) All of the above
(E) None of the above

POST TEST

Year 1

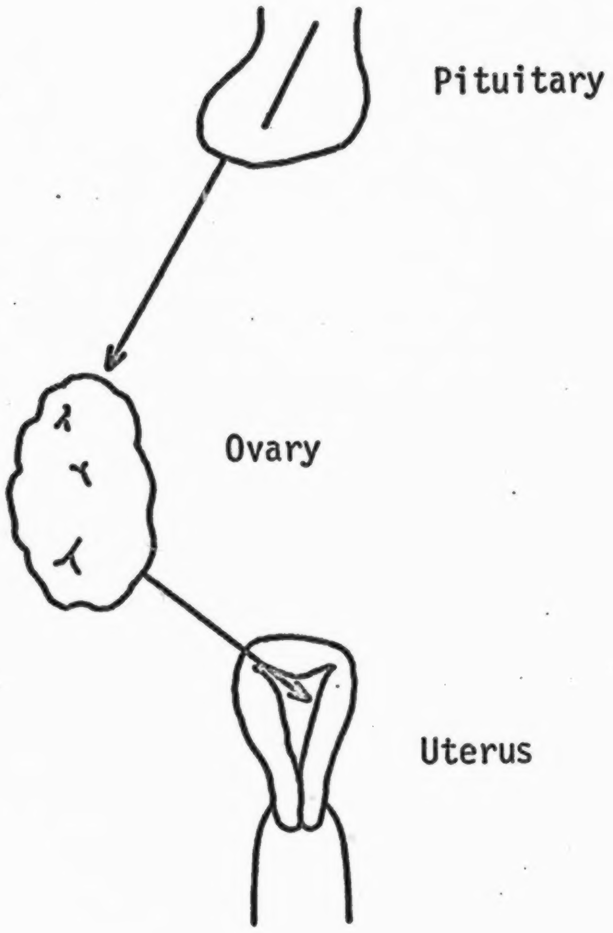
On the basis of the item analysis, this test was abridged and modified for the second and third years.

NAME: ____________________

GYNECOLOGY EXAMINATION - March 12, 1966

INSTRUCTIONS

1. Place your name on both the question folder and the answer sheet. Both will be collected after the examination.
2. The first 40 items relate to visual material, (either drawings or photographs). The remaining 60 items are verbal only. (See item 8.).
3. The examination is designed to take an hour. Papers will be collected after one hour and 15 minutes.
4. All answers must be placed on the separate answer sheet. Use capital letters only.
5. Each multiple choice item has but one answer. Select the best alternative and place its designating letter in the appropriate space on the answer sheet.
6. A few items are of the matching type. These have been so designated in the item. Each numbered item is to be matched with the best single alternative and the designating letter placed in the appropriate space on the answer sheet.
7. Do not write in the test booklet.
8. We realize all of the visual material which we had intended to present to you was not adequately seen. Accordingly you do not have the basis for answering some of the visual items on this examination. This will be taken into account in determining your grade on this examination.



Endocrine Relationship
of Pituitary-Ovarian-
Uterine Axis

Item 1 Which of the following hormones emanates from the pituitary evoking stimulation of the ovary?

(A) Estrogen

(B) Estrogen & Progesterone

(C) Progesterone

(D) Oxytocin

(E) Follicular Stimulating Hormone (F.S.H.) & Luteinizing Hormone (L.H.)

Item 2 Which of the following hormones emanates from the ovaries and stimulates the endometrial tissue of the uterus?

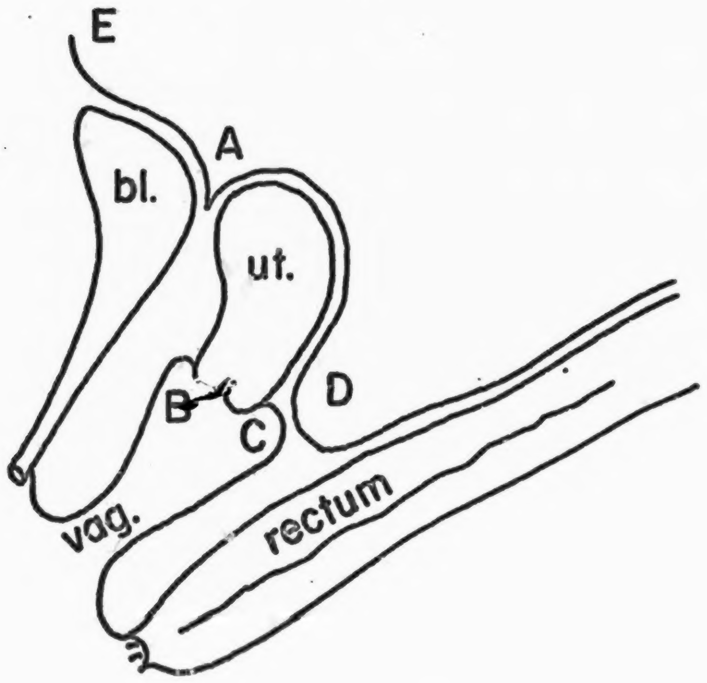
(A) Testosterone

(B) Estrogen & Progesterone

(C) Thyroxin

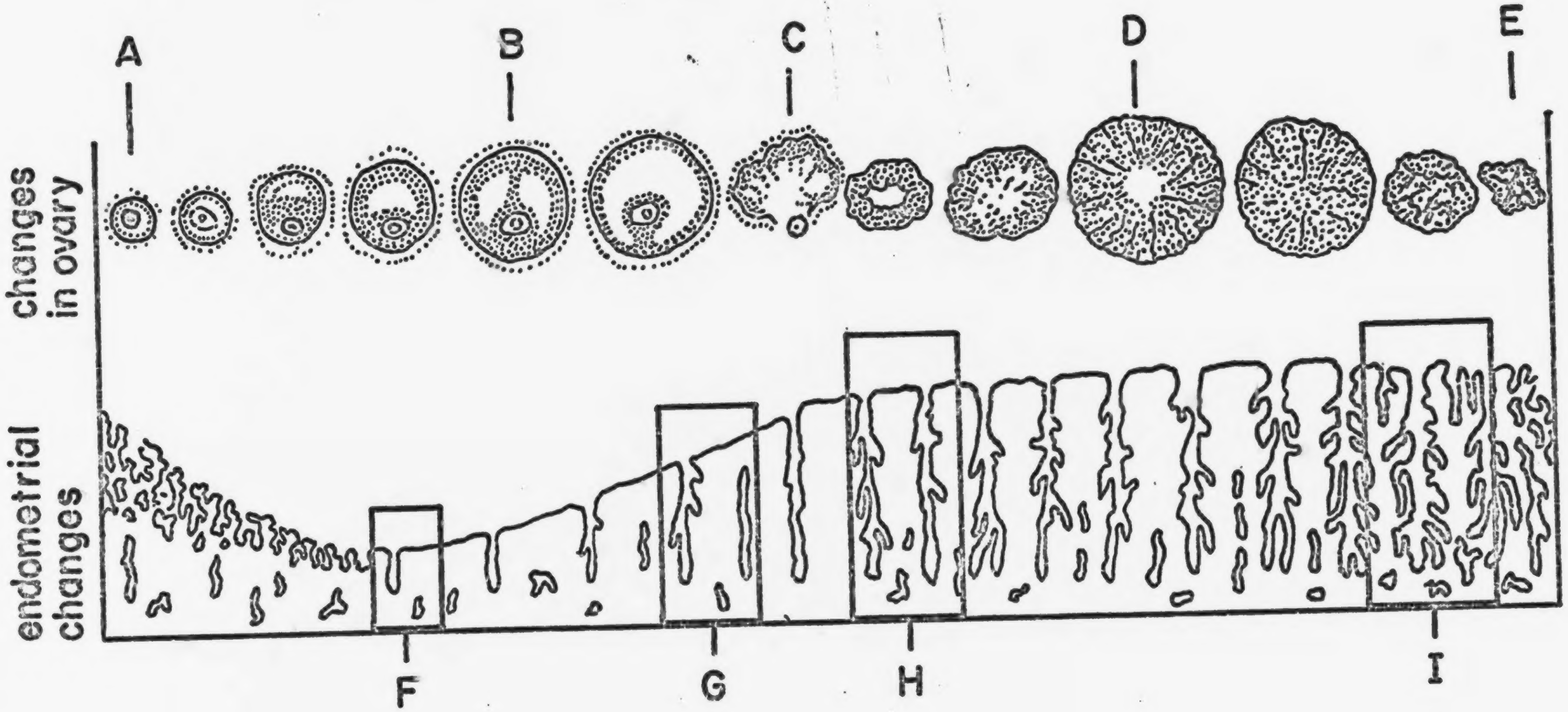
(D) F.S.H. & L.H.

(E) Adrenalin


E
A
bl.
ut.
D
B
C
vag.
rectum

Item 12 Which letter in the above diagram corresponds to the anatomical location of the Cul-de-sac of Douglas

The diagram shown below graphically depicts the inter-relations of the ovarian and menstrual cycles. Match the graphic findings with the following items (Item 3-7-ovarian cycle and Item 8-11-endometrial phases during menstrual cycle)



Item 3 Rupture of Follicle (Ovulation)

Item 4 Graafian Follicle

Item 5 Corpus Albicans

Item 6 Primordial Follicle

Item 7 Corpus Luteum

Item 8 Early Secretory Phase

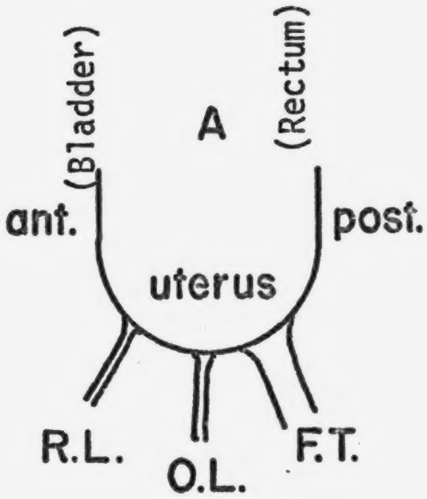
Item 9 Early Proliferative Phase

Item 10 Late Secretory Phase

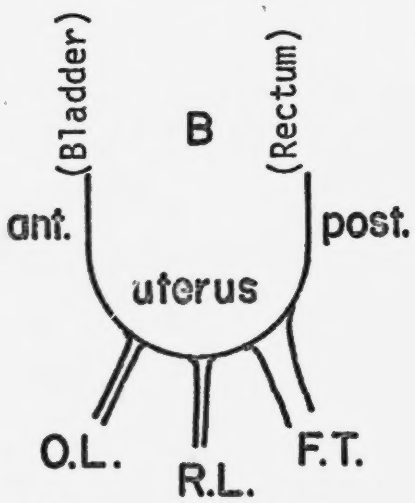
Item 11 Late Proliferative Phase

Item 13 Which of the following diagrams represents the correct anatomical inter-relationship of the round ligament (R.L.), the ovarian ligament (O.L.) and Fallopian Tube (F. T.) as viewed at the time of laparotomy (abdominal operation)

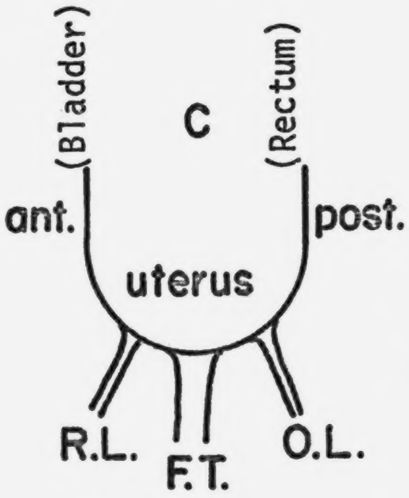
A


(Bladder)
(Rectum)
ant.
post.
uterus
R.L.
O.L.
F.T.

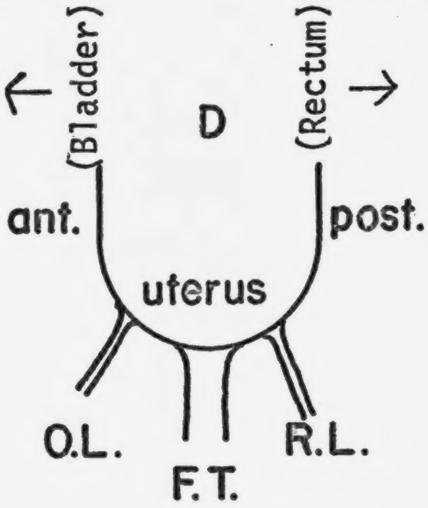
B


(Bladder)
(Rectum)
ant.
post.
uterus
O.L.
R.L.
F.T.

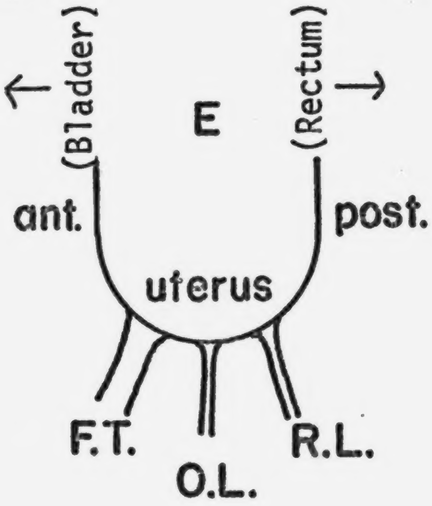
C


(Bladder)
(Rectum)
ant.
post.
uterus
R.L.
F.T.
O.L.

D

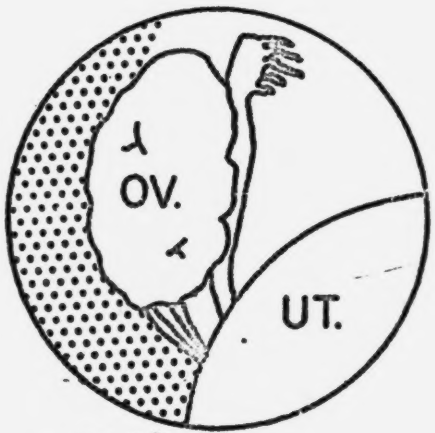

←
(Bladder)
(Rectum)
→
ant.
post.
uterus
O.L.
F.T.
R.L.

E

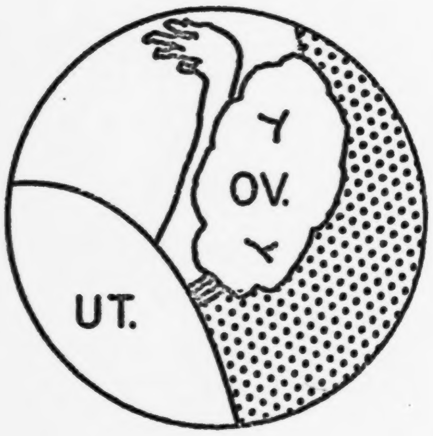

←
(Bladder)
(Rectum)
→
ant.
post.
uterus
F.T.
O.L.
R.L.

R.L. - Round Ligament
O.L. - Ovarian Ligament
F.T. - Fallopian Tube

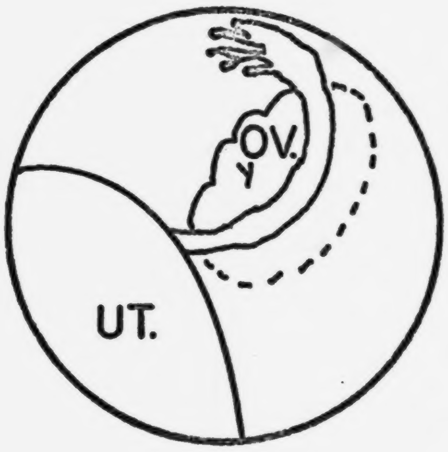
Item 14 Which of the following schemata depicts the correct anatomic relationships of the right adnexal structures as viewed through a culdoscope (with patient in knee-chest position).



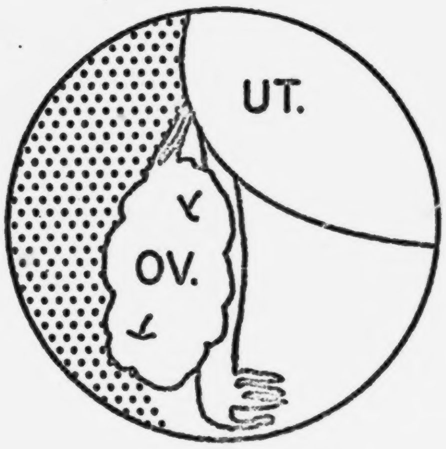
A



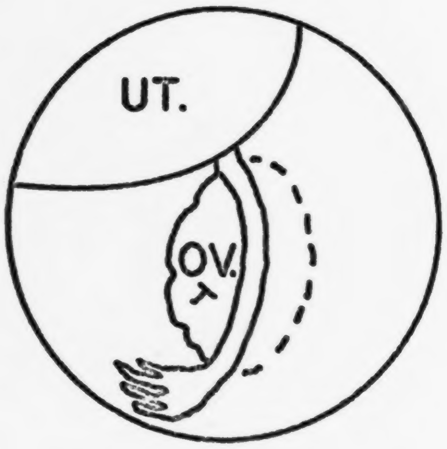
B



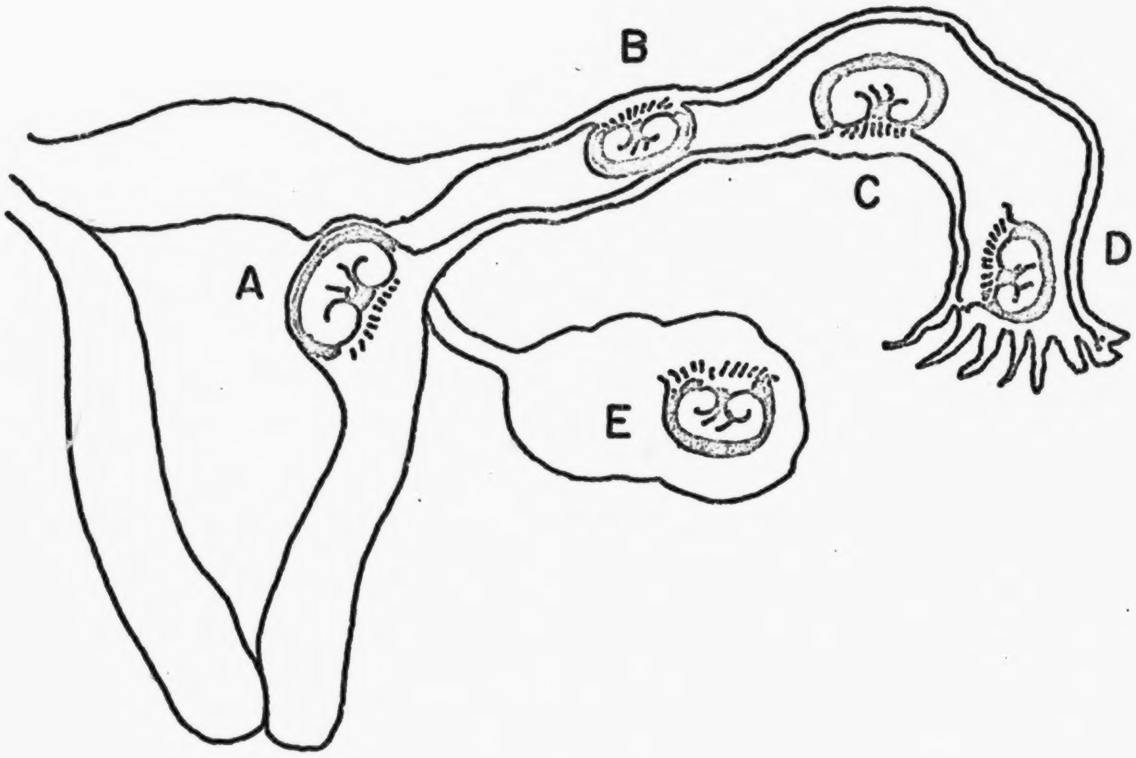
C



D



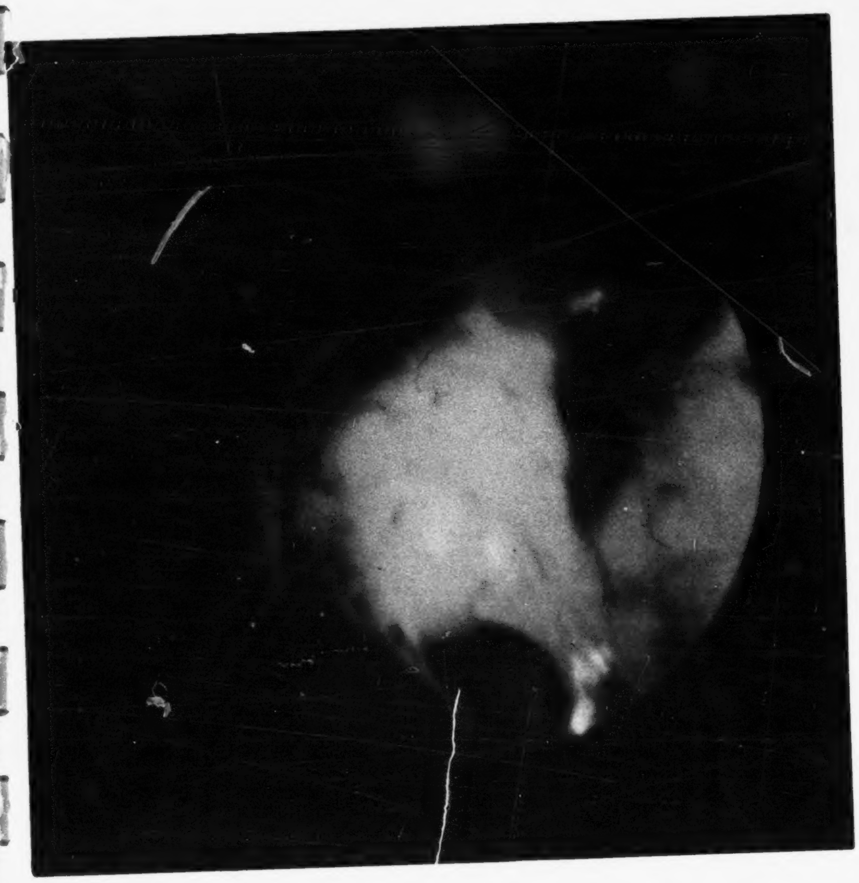
E



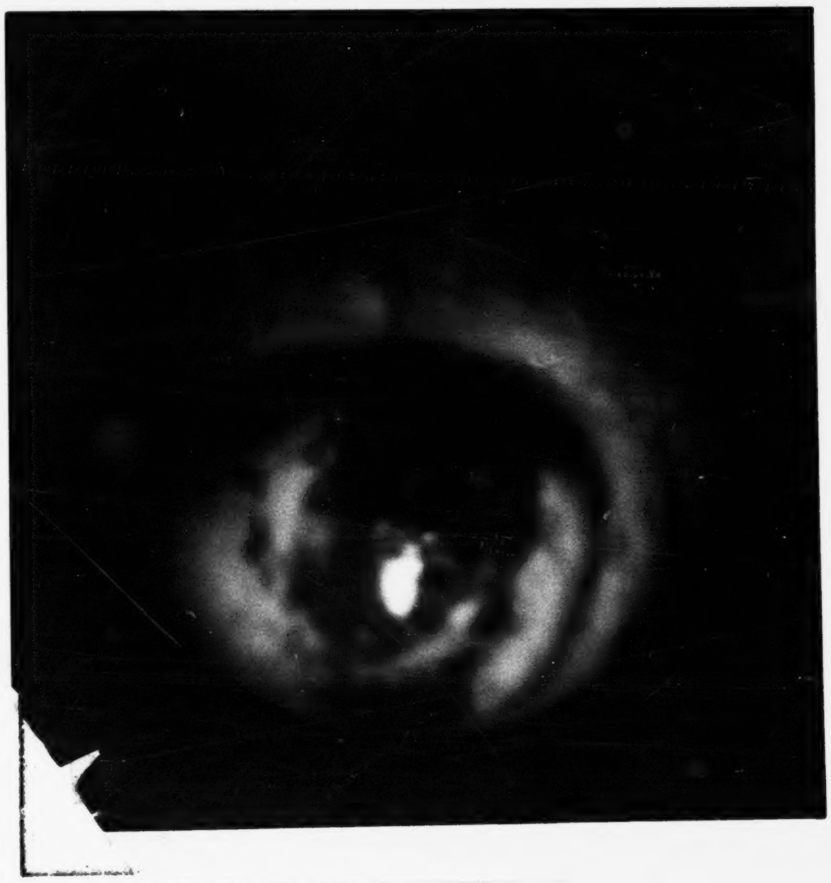
Item 15 Which of the indicated sites is most commonly involved in an ectopic pregnancy.

Match the following items (16-21) with the appropriate color photographs.

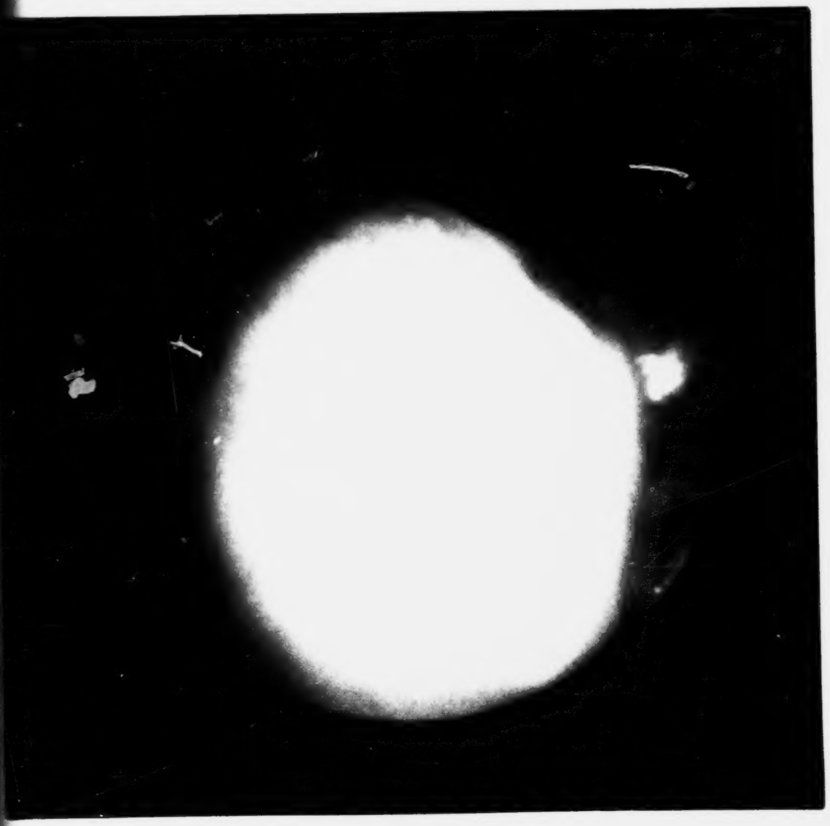
Item 16 Ovary with fresh corpus luteum ( )
Item 17 Ovary with follicles ( )
Item 18 Ovary with endometrial implant ( )
Item 19 Stein-Leventhal ovary ( )
Item 20 Unruptured ectopic pregnancy ( )
Item 21 Periovarian adhesion ( )



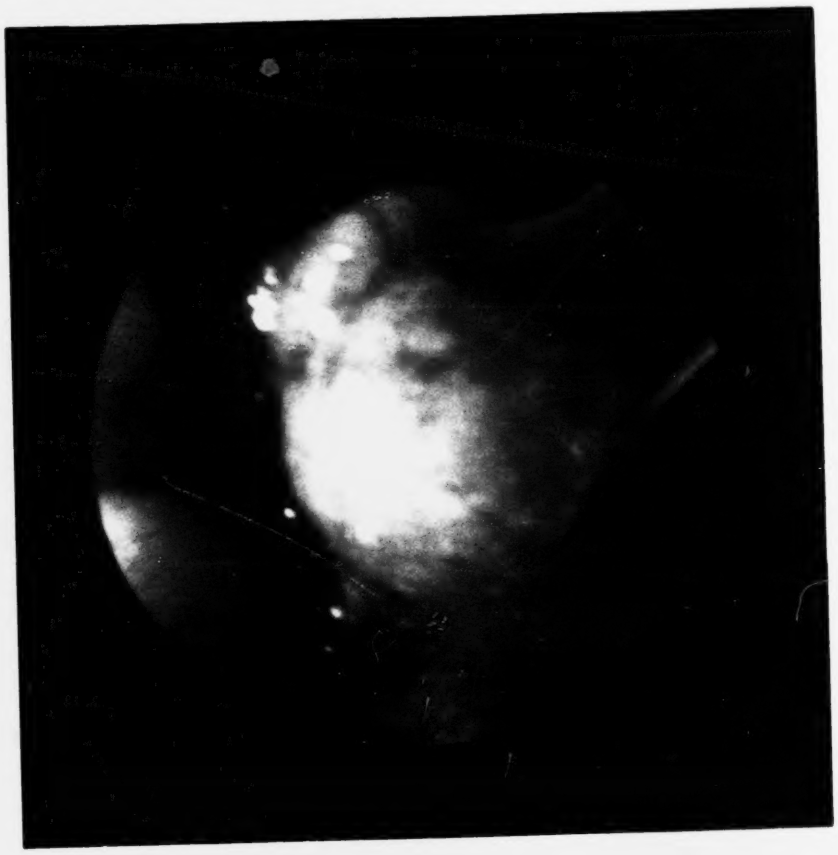
A



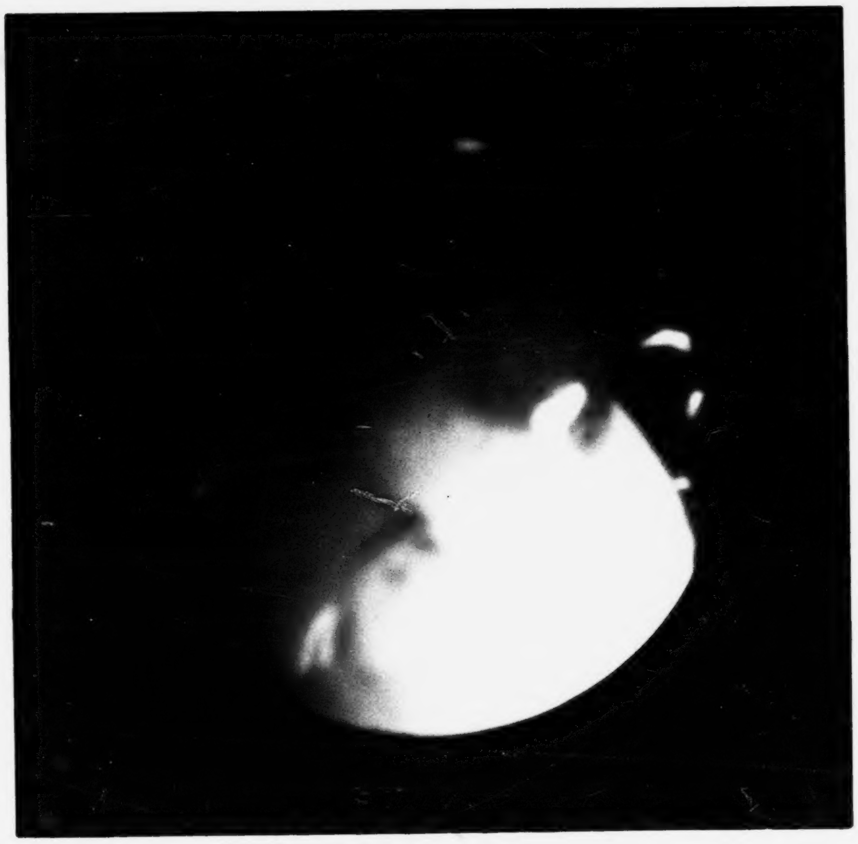
B



C

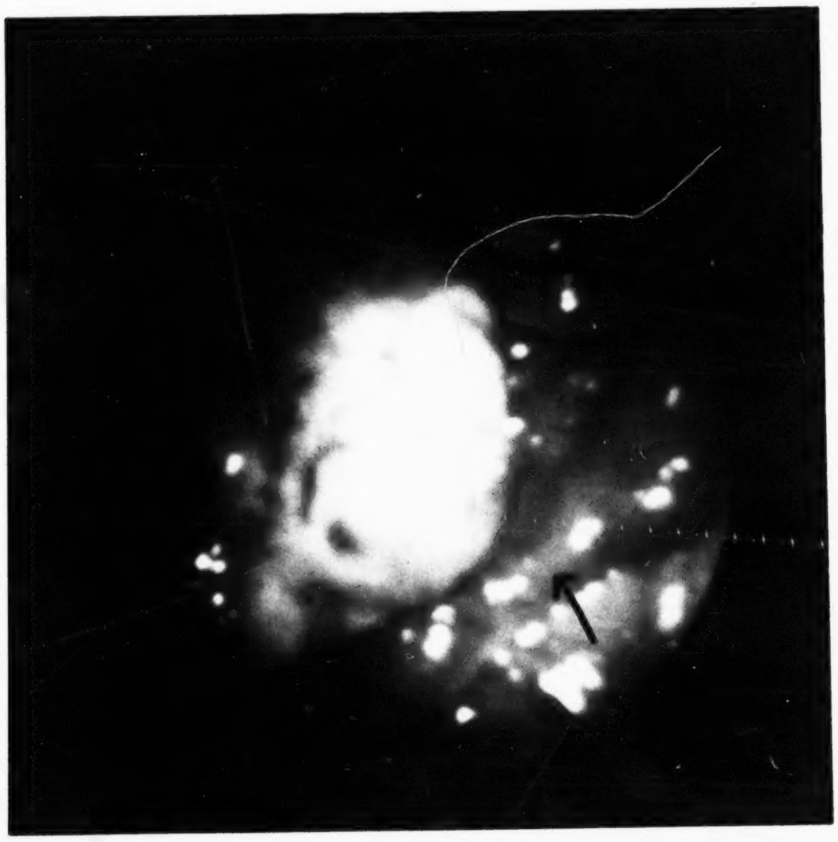


D



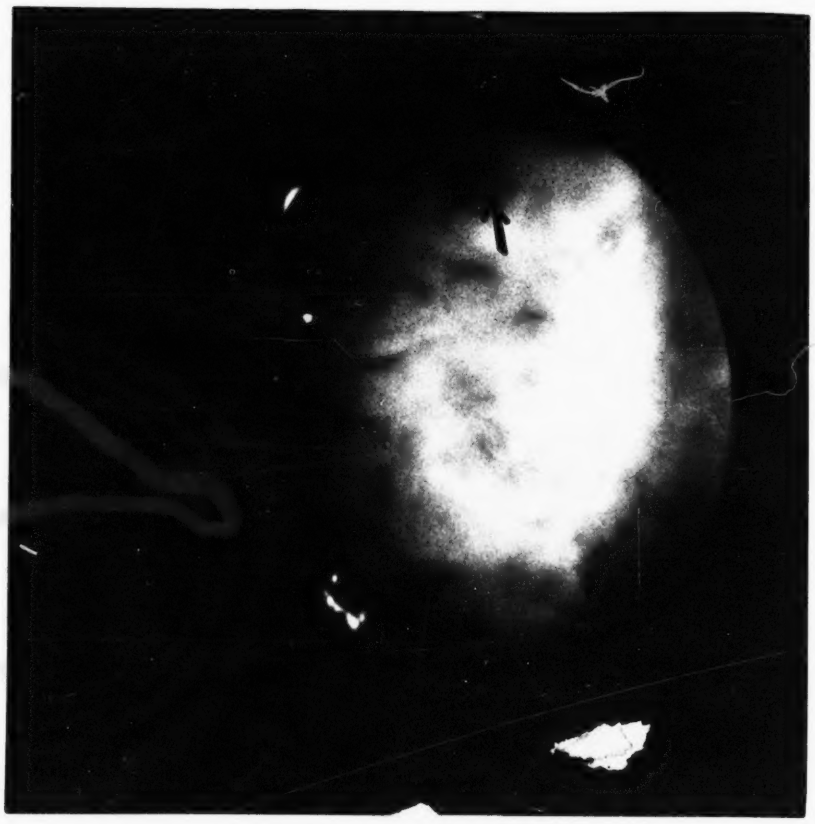
E

F



Item 22 The pelvic structure indicated by the arrow is most likely:

(A) The Small Intestine
(B) The Appendix
(C) The Infundibulo-Pelvic Ligament
(D) The Fallopian Tube
(E) The Round Ligament



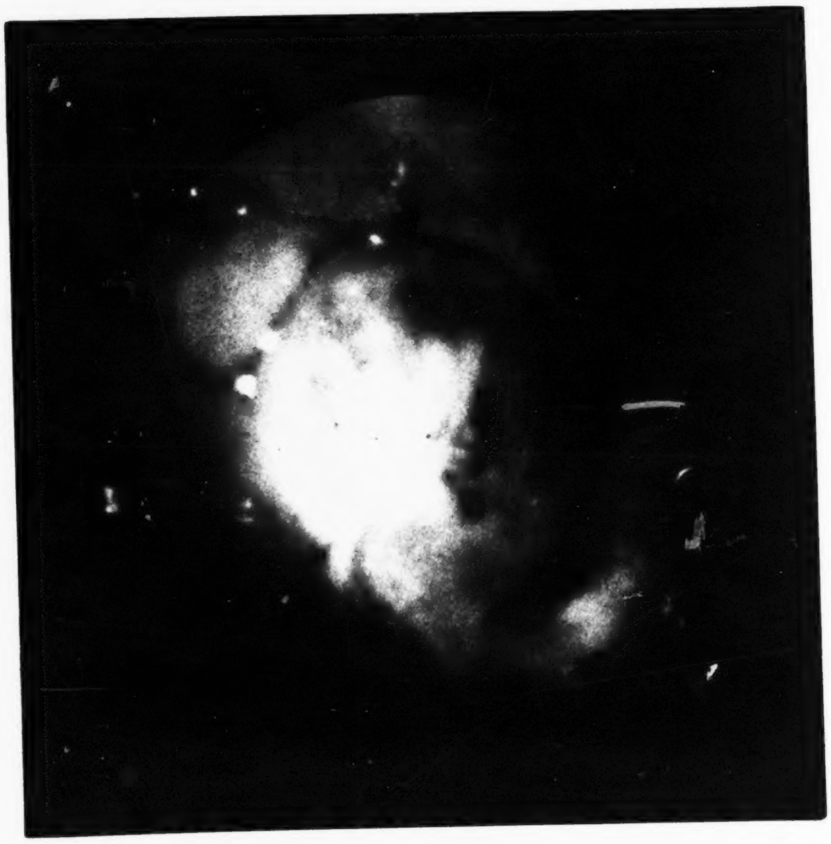
Item 23 Which of the following terms identifies the nature of the area indicated by the arrow on the ovarian surface.

(A) Corpus Luteum
(B) Ruptured follicle (e.g., ovulation)
(C) Corpus Albicans
(D) Early Follicle
(E) Ovarian Cyst

The following photograph was taken from a 28 year old G1P1[*] woman who underwent culdoscopy because of secondary sterility of 5 years duration. Her menstrual patterns were regular. Hysterosalpingogram showed bilateral tubal patency. The sperm count of her husband was normal. Culdoscopy was performed on cycle day 15 to rule out possible silent factors that might account for her sterility.

(Items 24 to 27 apply to this case)

[*] G1P1 = Gravidity one, Parity one



Item 24 In the above view, which of the adnexal structures is absent to visualization.

(A) Fallopian tube

(B) Ovary

(C) Uterus

(D) Ovarian ligament

(E) Hilar region of the ovary

Item 25 The area indicated by the arrow is probably.

(A) Dermoid cyst

(B) Ectopic pregnancy

(C) Follicular cyst

(D) Corpus hemorrhagica

(E) Fibroid

Item 26 What endometrial finding would be expected in view of the ovarian findings?

(A) Early proliferative

(B) Late proliferative

(C) Early secretory

(D) Late secretory

(E) Atrophic

Item 27 Which of the following peripheral indices is out of harmony with the ovarian findings depicted in the above photograph.

(A) "Ferning" of the cervical mucus

(B) Positive-Spinnbarkeit (Cervical mucus stretched to 10 cm.)

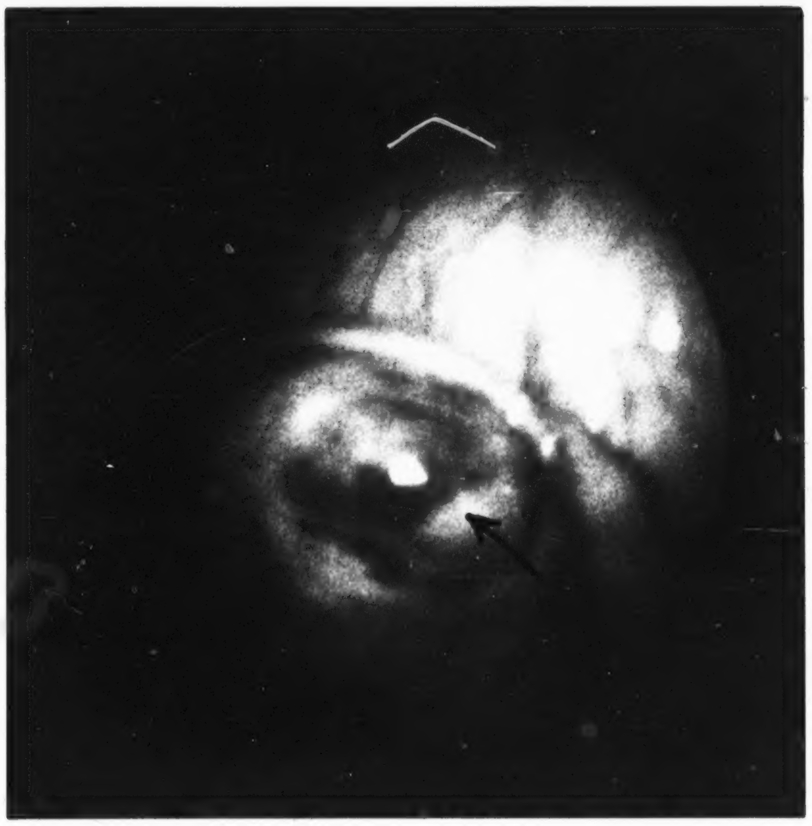
(C) Marked curling, folding, and clumping of the vaginal epithelium

(D) High urinary estrogen output

(E) None of the above

The following photograph was taken from a 30 year old female G2P2 with a complaint of chronic pelvic pain. Her menstrual patterns were normal and pelvic examination failed to detect any abnormal findings. Culdoscopy was performed on cycle day 24 to aid in the differential diagnosis of her chronic pelvic pain.

(Items 28 to 30 apply to this case)



Item 28 The area on the ovarian surface indicated by the arrow is best identified by which of the following alternatives:

- (A) Corpus luteum
- (B) Primordial follicle
- (C) Graafian follicle
- (D) Follicular cyst
- (E) Endometrioma

Item 29 The endometrial finding that would be compatable with the ovarian findings on the same cycle day would be:

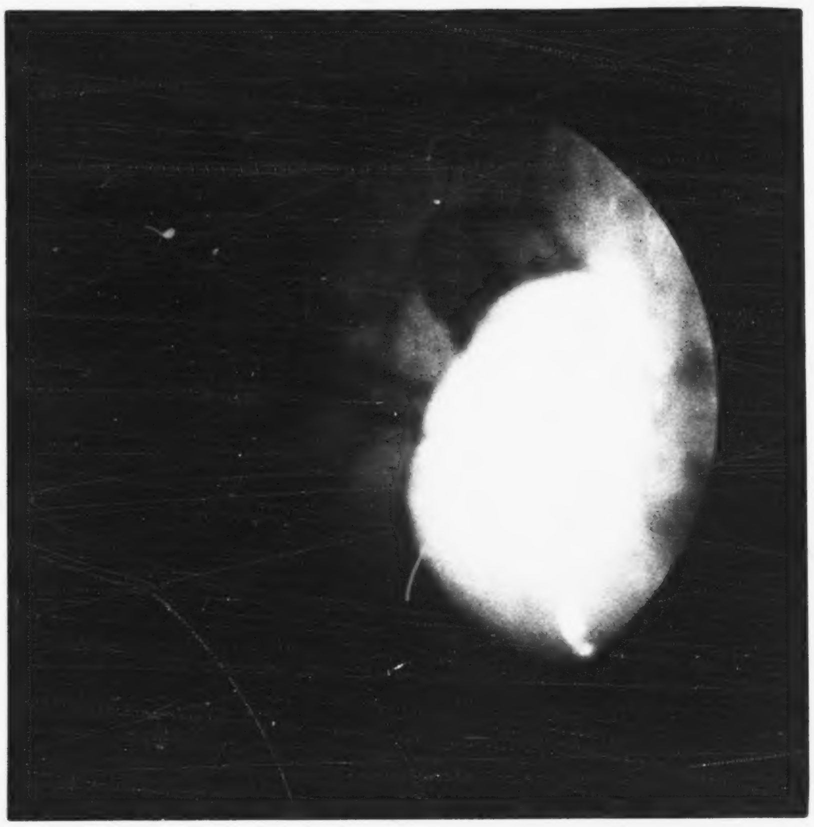
- (A) Early proliferative
- (B) Late proliferative
- (C) Early secretory
- (D) Late secretory
- (E) Atrophic

Item 30 A 24 hour urinary pregnanediol level obtained on the same day would be expected in which of the following ranges.

- (A) Less than 2 mg/24 hrs
- (B) Between 2-10 mg/24 hrs
- (C) Between 10-50 mg/24 hrs
- (D) Between 50-100 mg/24 hrs
- (E) Over 100 mg/24 hrs

The following photograph was taken from a 28 year old female, G4P4 who had been on oral contraceptive pills for the preceding six months and complained of right lower quadrant pain. Pelvic examination revealed a "possible" mass in the right adnexal region. Culdoscopy was performed on cycle day 20 to aid in the differential diagnosis.

(Items 31 to 33 apply to this case)



Item 31 Which of the following anatomic structures can not be identified on the above photograph:

(A) Uterus

(B) Ovary

(C) Fimbriated end of the follopian tube

(D) Hilar region of the ovary

(E) Small veins on anterior peritoneal surface

Item 32 Presuming the contralateral ovary is identical in its appearance, which of the following statements is out of harmony with the photographic findings shown above:

(A) Visible surface follicular activity is at a minimum

(B) Urinary pregnanediol level is in an anovulatory range.

(C) The corpus luteum is visible.

(D) No abnormal growth appears on the surface of ovary.

(E) No ovarian enlargement is noted.

Item 33 The mechanism of oral contraceptive pills is believed to be:

(A) Destruction of spermatozoa in the female genital tract.

(B) Delay of ovulation.

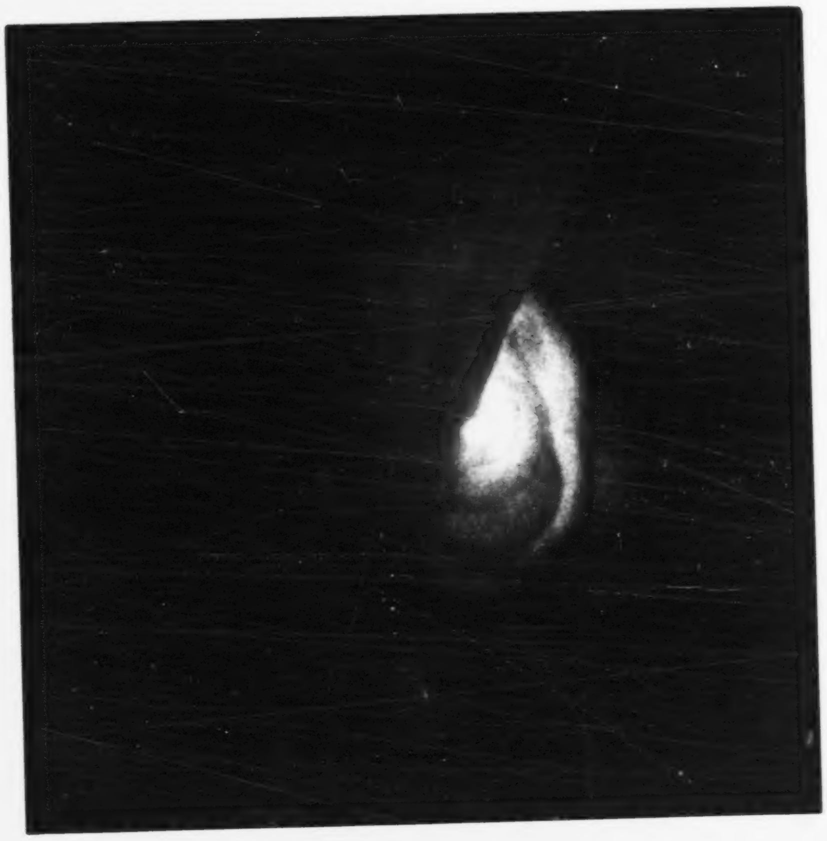
(C) Suppression of ovulation.

(D) Prevention of fertilization.

(E) Prevention of implantation of fertilized ovum.

The following photograph was taken from a 25 year old female, GoPo who underwent culdoscopy because of primary sterility of 4 years duration. Her menstrual patterns were regular and pelvic examination was within normal limits. Hysterosalpingography revealed partial obstruction of the left tube. Culdoscopy was performed to clarify the extent and cause of the tubal blockage.

(Items 34 to 36 apply to this case)



Item 34 The reddish veil-like structure around the left ovary is:

(A) Hydrosalpinx

(B) Periovarian adhesion

(C) Omentum

(D) Meso-salpinx

(E) Meso-ovarium

Item 35 If the contralateral adnexa demonstrated identical findings, the most likely cause of sterility in this patient is:

(A) Pituitary failure

(B) Ovulatory failure

(C) Impairment of the ovum pick-up mechanism

(D) Impairment of the implantation of the fertilized ovum.

(E) Cervical stenosis.

Item 36 Which of the following procedures might improve the fertility of this patient?

(A) Hormonal therapy

(B) Irradiation of pituitary gland

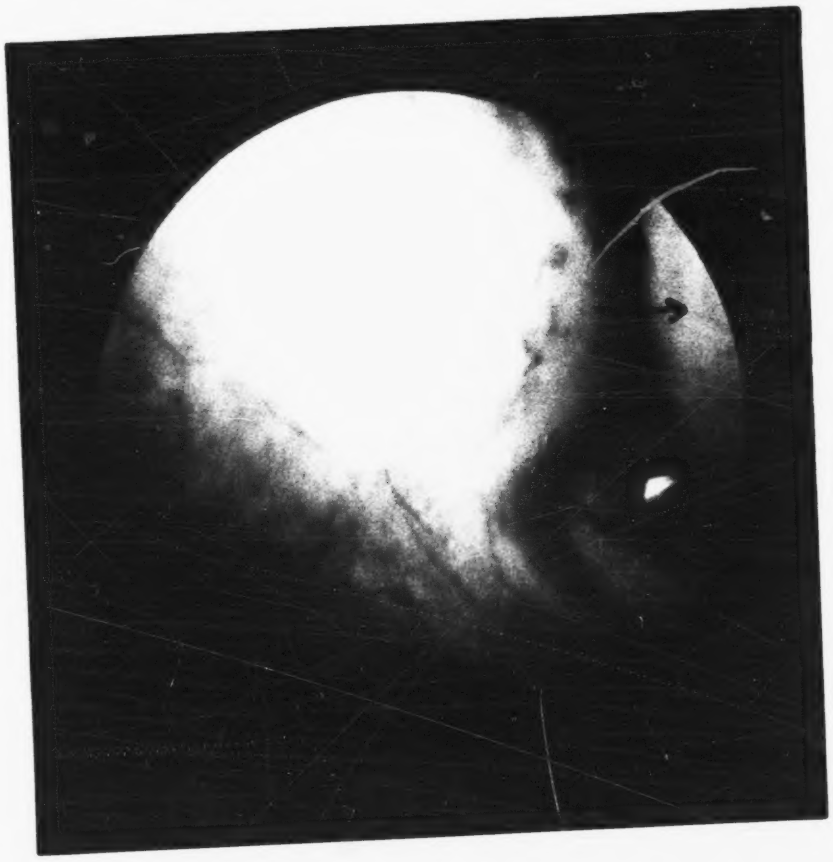
(C) Dilation of the cervix

(D) Wedge resection of the ovary

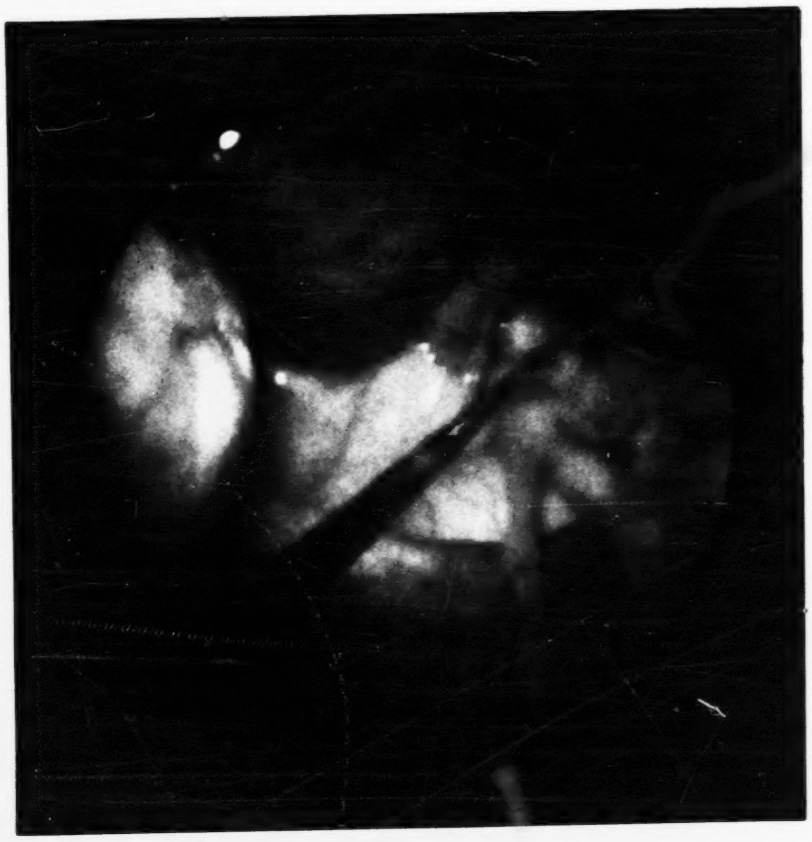
(E) Lysis of adhesions

The following photograph was taken from a 24 year old female, G1P1, who underwent culdoscopy because of secondary sterility and oligomenorrhea of 4 years duration. Pelvic examination revealed bilateral ovarian enlargement. Culdoscopy was performed on cycle day 20 to help establish the cause for the patient's symptoms and pelvic findings.

(Items 37 to 38 apply to this case)



(Items 39 and 40 apply to the following photo)



Item 39 The sacular structure superior to the ovary in the above photograph is most likely:

(A) Endometrioma

(B) Hydrosalpinx

(C) Bladder

(D) Tuberculous implant

(E) None of the above

Item 40 The most likely cause for the pelvic findings shown is:

(A) Hormonal imbalance

(B) Congenital anomaly

(C) Endometriosis

(D) Tubercular peritonitis

(E) Gonorrheal pelvic inflamatory disease

Item 41 It is thought that the mammalian ovum remains fertilizable for:

(A) Three to four hours

(B) Four to eight hours

(C) 8 to 12

(D) Twelve to twenty-four hours

(E) 24 to 72 hours

Item 42 At the time of implantation, the fertilized ovum has reached the:

(A) Morula stage

(B) Eight-cell stage

(C) Blastocyst stage

(D) Gastrula stage

(E) None of above

Item 43 The best single method of contraception for all patients is:

A Oral hormonal contraceptives

B Intrauterine contraceptive devices

C Surgical sterilization

D Rhythm

E There is no "single best method"

Item 44 The"acceptability" of any one contraceptive method is influenced by:

A Motivation of the couple

B Socioeconomic level of the couple

C Sexual attitudes including neurotic interactions of the couple

D Religious beliefs of the couple

E All of the above

Item 45 Of the non-surgical contraceptive methods the following are listed correctly in their theoretical order of effectiveness

A Oral hormones, IUD's, Rhythm, Local methods.
B IUD's, oral hormones, rhythm, local methods.
C Oral hormones, IUD's, local methods, rhythm.
D Oral contraceptives, local methods, IUD's, rhythm.
E IUD's, oral contraceptives, local methods, rhythm.

Item 46 Which of the following conditions (if severe) contraindicates the efficient uses of the diaphragm

A anteflexion
B cystocele
C retroversion
D uterine prolapse
E all of above

Item 47 When spermicidal preparations are used to prevent pregnancy, at what point following coitus may a douche be taken without increasing the risk of pregnancy?

A immediately following coitus
B 3 hours following coitus
C 5 hours following coitus
D 6 hours following coitus
E none of the above

Item 48 A common side-effect of oral contraception is:

A breakthrough bleeding and spotting
B nausea and vomiting
C breast tenderness
D weight gain
E all of the above.

Item 49 Pituitary gonadotropins are required for:
A development of a corpus luteum
B growth of an ovarian follicle
C ovulation
D all three events listed above
E none of the three events listed above

Item 50 Pituitary gonadotropins can be inhibited by:
A estrogen alone
B progesterone alone
C a combination of estrogen and progesterone
D all of above
E none of above

Item 51. Luteotrophic Hormone (LTH), if it exists in humans, has the following effects:
A. ✓ Stimulates follicle maturation
B. Causes ovulation
C. Maintains the corpus luteum
D. All of the above
E. None of the above

Item 52 The shift in Basal Body Temperature (elevation) takes place:
A. At the onset of menstruation.
B. Approximately 1 week before the onset of menstruation.
C. Approximately 2 weeks before the onset of menstruation.
D. Immediately after menstruation.
E. None of the above.

Item 53 The typical shift in basal body temperature associated with an ovulatory cycle consists of a:

A temperature drop only

B temperature rise only

C temperature drop followed by a sustained temperature rise

D temperature rise followed by a temperature drop

E none of above

Item 54 Listed below are some of the methods by which a determination of the exact time of ovulation has been attempted, either clinically or experimentally. Which of the following would be the easiest method of estimating ovulation time for use by both the physician and the patient.

A analysis of cervical mucus

B assay of hormones

C determination of body temperature at rest, i.e. basal body temperature

D examination of the ovary

E vaginal cytology

Item 55 Which of the following best delineates the period of time during which conception is possible?

A beginning of menstruation to the day the basal body temperature rises

B beginning of menstruation through three days after the rise in basal body temperature

C day 5 of the cycle to the day the basal body temperature rises

D day 5 of the cycle through three days after the rise in basal body temperature .

Item 56 The human ovary at birth contains:

A No ova

B 400 to 600 ova

C 4,000 to 6,000 ova

D 400,000 to 600,000 ova

E some other number

Item 57 At birth a woman is endowed with the following proportion of her total life time complement of ova:

(A) 20%

(B) 40%

(C) 60%

(D) 80%

(E) 100%

Item 58 The onset of progesterone production is known to occur:

(A) Immediately prior to ovulation

(B) Immediately after ovulation

(C) After the corpus luteum is 24 hours old

(D) Three days after ovulation

(E) At some other time

Item 59 The cavity (antrum) of the Graffian follicle is lined with a layer referred to as the:

(A) Membrana folliculosa

(B) Membrana granulosa

(C) Corona radiata

(D) Cumulus oophorus

(E) None of above

Item 60 The developing follicle "gains competence" i.e., becomes responsive to endogenous pituitary gonadotropins:

(A) At a time when it is surrounded by one layer of granulosa cells

(B) When there are three layers of granulosa cells surrounding the ovum

(C) Shortly after the antrum (cavity) is formed

(D) After luteinization of the theca interna

(E) None of the above

Item 61 The first polar body is released:

(A) In early stages of follicular development

(B) Shortly before ovulation

(C) Immediately after ovulation

(D) At the time of fertilization

(E) At another time

Item 62 In any given cycle the number of follicles estimated to have "gained competence" (i.e., have become responsive to pituitary gonadotropins) is approximately:

(A) 2 to 4

(B) 10 to 12

(C) 50 to 100

(D) 500 to 700

(E) None of above

Item 63 At the time of ovulation the chromosomes of the ovum are:

(A) In metaphase, arranged on a mitotic spindle

(B) In prophase

(C) In anaphase

(D) Have completed mitosis

(E) None of the above

Item 64 The duration of activity of each successive corpus luteum is:

(A) 5 plus or minus 3 days

(B) 8 plus or minus 2 days

(C) 14 plus or minus 2 days

(D) 16 plus or minus 5 days

(E) some other length of time

Item 65 In the ovulating woman displaying some variability in cycle length, the phase of the cycle which remains constant is:

(A) Proliferative (follicular) Phase
(B) Ovulatory Phase
(C) Secretory (luteal) Phase
(D) Menstrual Phase
(E) None of the above

Item 66 The elevation in basal body temperature associated with the postovulatory phase of the menstrual cycle is brought about by:

(A) Estrogen in increasing amounts
(B) TSH
(C) LH
(D) Progesterone
(E) All of above

Item 67 The layer which immediately surrounds the zona pellucida of the recently ovulated ovum is referred to as the:

(A) Discus proligerus
(B) Lupus vulgaris
(C) Corona radiata
(D) Membrana granulosa
(E) None of above

Item 68 The biological definition of fertilization is:

(A) That moment when the male and female pronuclei join
(B) That moment of penetration of the ovum by the spermatozoon
(C) The time of the first cell division
(D) Implantation
(E) None of above

Item 69 The fimbriated end of the Fallopian tube is attached to the ovary by means of the:

(A) Tubal attracting muscle
(B) Utero-ovarian ligament
(C) Infundibulo pelvic ligament
(D) Round Ligament
(E) None of above

Item 70 In most mammalian species, the fertilized ovum is retained in the Fallopian tube for approximately:

(A) 24 hours
(B) 48 hours
(C) 72 hours
(D) 96 hours
(E) 120 hours

Item 71 There is indirect evidence that in the human, implantation occurs on the:

(A) First to second post-ovulatory day
(B) Second to third post-ovulatory day
(C) Fourth to fifth post-ovulatory day
(D) Sixth to seventh post-ovulatory day
(E) Eighth to ninth post-ovulatory day

Item 72 The process of conditioning of spermatozoa, which appears to be a prerequisite to fertilization (proven in lower mammalian species) is referred to as:

(A) Capacitation
(B) acquisitation
(C) adaptation
(D) inclination
(E) none of above

Item 73 The shortest interval between ejaculation and migration of spermatozoa into the cervical mucus in patients is:

(A) One to three minutes
(B) Three to ten minutes
(C) Ten to twenty minutes
(D) Twenty to thirty minutes
(E) Thirty minutes to one hour

Item 74 Spermatozoa may retain their motility in the human female reproductive tract as long as:

(A) Less than twelve hours
(B) Twenty-four hours
(C) Thirty-six hours
(D) Forty-eight hours
(E) 3 - 4 days

Item 75. One of the main cytologic features that delineates estrogen effects on the vaginal mucosa is:

A. Lysis of cells
B. cornification of cells
C. regression of cells
D. subnuclear vacuolization
E. all of the above

Item 76. The cervical mucus is most receptive to spermatozoa:

A. Immediately following menstruation
B. Immediately preceeding ovulation
C. In the immediate postovulatory 2 days
D. In the mid luteal phase
E. None of the above

Item 77. The characteristic histologic changes in the endometrium which occur following ovulation are brought about by the influence of:

A. Progesterone
B. Cortisone
C. FSH
D. TSH
E. Estrogen

Item 78. The cellular elements lining the Fallopian tube include:

A. Ciliated cells
B. Endometrial cells
C. Myometrial cells
D. A serosal layer
E. None of above

Item 79. The part of the IUD that protrudes from the cervix is called the cervical appendage, Which of the following is a possible advantage of the cervical appendage?

A. makes self-examination for continued presence relatively easy
B. prevents spontaneous expulsions
C. facilitates insertion
D. None of the above
E. All of the above

Item 80. At what phase of the menstrual cycle is an intrauterine device usually inserted?

A. During the menses
B. Immediately following the menses
C. Mid cycle
D. Secretory phase
E. Premenstrual phase

Item 81 The portion of fallopian tube contained within the muscular wall of the uterus is termed:

(A) Ampulla
(B) Myometrial
(C) Isthmian
(D) Infundibular
(E) Interstitial

Item 82 Primary amenorrhea is a term used to designate that:

(A) The ovary is primarily at fault
(B) The defect is genetic
(C) Menstruation has never occurred
(D) The uterus cannot respond
(E) The condition is not secondary to systemic disease

Item 83 Secondary amenorrhea is a term which implies that:

(A) An ovarian abnormality is present
(B) The condition is physiologic
(C) Menarche did occur
(D) Sexual development is normal
(E) The endometrium is capable of responding

Item 84 The most frequent cause of amenorrhea in young adult women is:

(A) Primary ovarian failure
(B) Hypothyroidism
(C) Pituitary failure
(D) Pregnancy
(E) Psychoneurosis

Item 85 Failure of withdrawal bleeding to occur following administration of adequate amounts of estrogen to an amenorrheic woman may indicate:

(A) A uterine factor
(B) Ovarian failure
(C) A pituitary factor
(D) A hypothalamic lesion
(E) An ovarian tumor

Item 86 Withdrawal bleeding following administration of progesterone to an amenorrheic woman indicates:

(A) Gonadotropin production
(B) Endogenous estrogen production
(C) Absence of pregnancy
(D) All of the above
(E) None of the above

Item 87 Primary hypogonadism may be differentiated from pituitary failure by demonstration of:

(A) Small gonads
(B) Lack of secondary sex characteristics
(C) High excretion of pituitary gonadotropins
(D) All of the above
(E) None of the above

Item 88 The following pubertal changes are influenced by estrogen:

(A) Epiphysial fusion
(B) Growth of bony pelvis
(C) Growth of breasts
(D) All of the above
(E) None of the above

Item 89 The most useful procedure for detecting the cause of infertility in a woman with normal ovarian function and tubal patency is:

(A) Protein-bound iodine
(B) Culdoscopy
(C) Basal metabolic rate
(D) Glucose tolerance test
(E) 17-ketosteroid assay

Item 90 The age at which endometriosis is most frequently diagnosed is:

(A) Under 20 years
(B) 20-30 years
(C) 30-40 years
(D) 40-50 years
(E) over 50 years

Item 91 The most common site of endometriosis is the:

(A) Uterovesical fold
[✓ (B) Pouch of Douglas]
(C) Ovary
(D) Vaginal vault
(E) Cervix

Item 92 Which of the following hormones has not been recommended for the treatment of endometriosis

(A) Estrogen
(B) Progesterone
(C) Testosterone
(D) Thyroid extract
(E) Estrogen-Progesterone combinations

Item 93 Dysmenorrhea due to endometriosis has the following characteristics:

(A) Acquired in type
(B) Pain maximum during menses
(C) Pain precedes onset of menses
(D) Pain ceases abruptly at onset of flow
(E) All of the above

Item 94 Endometriosis is frequently found in association with:

(A) Uterine muomas
(B) Uterine retroversion
(C) Endometrial hyperplasia
(D) Infertility
(E) All of the above

Item 95 The cumulus oophorus is made up of:

(A) Theca cells
(B) Granulosa cells
(C) Connective tissue
(D) Luteinized theca and granulosa cells
(E) Acellular material

Item 96 The cyclic production of pituitary hormones depends on:

(A) An adult anterior pituitary gland
(B) An intact pituitary-portal system
(C) Normal menstruation
(D) All of the above
(E) None of the above

Item 97 Spermatozoa arrive at the site of fertilization by virtue of:

(A) Their own motility only
(B) Muscular action within the uterus and tube
(C) Differential pressures at the cervix and tube
(D) Electrical activity of the endometrium
(E) Chemotactic properties of the reproductive tract

Item 98 The exact day of ovulation may be determined by:

(A) Basal temperature studies
(B) Urinary estrogen determination
(C) Pregnanedial determination
(D) All of the above
(E) None of the above

Item 99 Ova which are released or transferred from the Fallopian tube within one day of fertilization:

(A) May implant and proceed to develop normally
(B) Are aborted
(C) Continue to grow normally in the uterus
(D) Develop into premature babies
(E) Tend to develop congenital anomalies

Item 100 Ovarian Estrogen:

(A) Is produced only before ovulation
(B) Is a polypeptide
(C) Causes growth of Mullerian duct derivatives
(D) Inhibits uterine motility
(E) Maintains lactation

1966-67

DISTRIBUTION OF ITEMS (SECOND YEAR POST-TEST)

	Contents	Number of Items	Item Numbers (as appears in the final draft)
I.	Genetics	2 (2 pairs)	#50, 51
II.	Embryology and Anatomy	6 (1 pair)	#1, 2, 9, 15, 30, 44
III.	Physiology of the Ovary	6 (1 pair)	#15, 24, 26, 34 36, 46
IV.	Physiology of the Normal Menstrual Cycle	12 (1 pair)	#3, 4, 8, 10, 11 12, 13, 16, 25, 29
V.	Puberty and Menarche	2 (1 also listed in Category III)	#35 (1/2 of #46 listed in III)
VI.	Syndrome of Ovarian Hypofunction	4	#6, 19, 20, 27
VII.	Syndrome of Ovarian Hyperfunction	2	#31,37
VIII.	Disorder of Menstruation	1 (1 pair)	#42
IX.	Infertility	13 (2 pairs)	#5, 7, 17, 18, 21 22, 23, 28, 39, 40, 41, 45, 47
X.	Menopause	1 (1 pair)	#49
XI.	Fertilization, Ovum, Transport and Implantation	2 (1 pair)	#38, 48
	Total	50 (10 pairs)	

ITEM ANALYSIS
SUMMARIES

PRETEST

```
ADDITIONAL TEST INFORMATION
```

Pretest B/W 60 items (raw score)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.506

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS

STANDARD ERROR OF CORRELATION =  0.209

ESTIMATED INTERITEM CORRELATION IS  0.101

KUDER-RICHARDSON 20 RELIABILITY =  0.738

TEST MEAN =  30.33   VARIANCE =     40.58   STANDARD DEVIATION =    6.39



            DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

    PER CENT PASSING              NUMBER OF ITEMS

         0 - 19                        8
        20 - 39                       11
        40 - 59                       18
        60 - 79                       13
        80 -100                       10



            DISTRIBUTION OF THE TEST ITEMS
    IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

        CORRELATIONS    NUMBER OF ITEMS

        NEGATIVE - .10        14
           .11 - .30          20
           .31 - .50          14
           .51 - .70           9
           .71 - .90           1
           .91 -1.00           2
```

```
ADDITIONAL TEST INFORMATION
```

Pretest   Col TV   60 items (raw score)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.492

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS

STANDARD ERROR OF CORRELATION =  0.209

ESTIMATED INTERITEM CORRELATION IS  0.051

KUDER-RICHARDSON 20 RELIABILITY =  0.537

TEST MEAN =  29.50   VARIANCE =     23.83   STANDARD DEVIATION =   4.90



          DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

     PER CENT PASSING            NUMBER OF ITEMS

          0 - 19                        9
         20 - 39                       12
         40 - 59                       16
         60 - 79                       14
         80 -100                        9



          DISTRIBUTION OF THE TEST ITEMS
     IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

          CORRELATIONS     NUMBER OF ITEMS

         NEGATIVE - .10         20
            .11 - .30           14
            .31 - .50           15
            .51 - .70           10
            .71 - .90            1
            .91 -1.00            0
```

```
ADDITIONAL TEST INFORMATION   .
```

PRETEST   Film   60 items (raw score)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.484

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0

STANDARD ERROR OF CORRELATION =  0.209

ESTIMATED INTERITEM CORRELATION IS  0.049

KUDER-RICHARDSON 20 RELIABILITY =  0.675

TEST MEAN =  28.96    VARIANCE =      34.82    STANDARD DEVIATION =    5.92



          DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

     PER CENT PASSING            NUMBER OF ITEMS

         0 - 19                         11
        20 - 39                         10
        40 - 59                         19
        60 - 79                         15
        80 -100                          5



          DISTRIBUTION OF THE TEST ITEMS
     IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

          CORRELATIONS     NUMBER OF ITEMS

        NEGATIVE - .10          18
           .11 - .30            16
           .31 - .50            18
           .51 - .70             6
           .71 - .90             1
           .91 -1.00             1
```

```
ADDITIONAL TEST INFORMATION
```

Pretest Control 60 items (raw score)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.488

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0

STANDARD ERROR OF CORRELATION =  0.209

ESTIMATED INTERITEM CORRELATION IS  0.067

KUDER-RICHARDSON 20 RELIABILITY =  0.615

TEST MEAN =  29.38   VARIANCE =      28.24   STANDARD DEVIATION =   5.33


                DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

     PER CENT PASSING              NUMBER OF ITEMS

         0 - 19                          10
        20 - 39                          10
        40 - 59                          19
        60 - 79                          12
        80 -100                           9



                DISTRIBUTION OF THE TEST ITEMS
          IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

             CORRELATIONS    NUMBER OF ITEMS

            NEGATIVE - .10        19
               .11 - .30          14
               .31 - .50          17
               .51 - .70           7
               .71 - .90           3
               .91 -1.00           0
```

POST TEST A.

```
ADDITIONAL TEST INFORMATION
```

Posttest A   B/w TV   50 items raw score

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.587

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS

STANDARD ERROR OF CORRELATION =  0.209

ESTIMATED INTERITEM CORRELATION IS  0.057

KUDER-RICHARDSON 20 RELIABILITY =  0.448

TEST MEAN =  29.42   VARIANCE =      16.95   STANDARD DEVIATION =    4.14



            DISTRIBUTION OF THE TEST ITEMS
 IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

      PER CENT PASSING            NUMBER OF ITEMS

           0 - 19                         2
          20 - 39                        10
          40 - 59                        11
          60 - 79                        16
          80 -100                        11



            DISTRIBUTION OF THE TEST ITEMS
     IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

          CORRELATIONS     NUMBER OF ITEMS

         NEGATIVE - .10          18
              .11 - .30           9
              .31 - .50          15
              .51 - .70           7
              .71 - .90           1
              .91 -1.00           0
```

```
ADDITIONAL TEST INFORMATION
```

Post test A   Col. T.V.   50 items   (raw score)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.602

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0.1

STANDARD ERROR OF CORRELATION =  0.209

ESTIMATED INTERITEM CORRELATION IS  0.032

KUDER-RICHARDSON 20 RELIABILITY =  0.130

TEST MEAN =  30.92   VARIANCE =     10.95   STANDARD DEVIATION =   3.34




            DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

     PER CENT PASSING              NUMBER OF ITEMS

          0 - 19                         3
         20 - 39                         8
         40 - 59                         8
         60 - 79                        20
         80 -100                        11




           DISTRIBUTION OF THE TEST ITEMS
    IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

           CORRELATIONS     NUMBER OF ITEMS

         NEGATIVE - .10          17
             .11 - .30           19
             .31 - .50           10
             .51 - .70            3
             .71 - .90            1
             .91 -1.00            0
```

```
ADDITIONAL TEST INFORMATION
```

Posttest A Film 50 items (raw score)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.622

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0

STANDARD ERROR OF CORRELATION =  0.196

ESTIMATED INTERITEM CORRELATION IS  0.059

KUDER-RICHARDSON 20 RELIABILITY =  0.560

TEST MEAN =  31.00   VARIANCE =      19.62   STANDARD DEVIATION =    4.45



            DISTRIBUTION OF THE TEST ITEMS
 IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

     PER CENT PASSING             NUMBER OF ITEMS

          0 - 19                         3
         20 - 39                         4
         40 - 59                         9
         60 - 79                        22
         80 -100                        12



            DISTRIBUTION OF THE TEST ITEMS
    IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

        CORRELATIONS     NUMBER OF ITEMS

       NEGATIVE - .10          14
            .11 - .30          11
            .31 - .50          18
            .51 - .70           7
            .71 - .90           0
            .91 -1.00           0
```

```
ADDITIONAL TEST INFORMATION
```

Posttest A Control 50 items (raw score)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.562

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0.

STANDARD ERROR OF CORRELATION =  0.204

ESTIMATED INTERITEM CORRELATION IS  0.089

KUDER-RICHARDSON 20 RELIABILITY =  0.679

TEST MEAN =  28.20    VARIANCE =      28.08    STANDARD DEVIATION =    5.32



           DISTRIBUTION OF THE TEST ITEMS
 IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

      PER CENT PASSING              NUMBER OF ITEMS

          0 - 19                         3
         20 - 39                        12
         40 - 59                        10
         60 - 79                        13
         80 -100                        12



           DISTRIBUTION OF THE TEST ITEMS
     IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

          CORRELATIONS     NUMBER OF ITEMS

         NEGATIVE - .10         11
             .11 - .30          15
             .31 - .50          13
             .51 - .70           5
             .71 - .90           6
             .91 -1.00           0
```

PRETEST AND POSTTEST COMBINED

Imputs are Z-score within tests within groups plus five. This eliminates group differences as sources of variance.

```
ADDITIONAL TEST INFORMATION
```

B+W combined. 120 items

z-scores +5

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.545

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0.22

STANDARD ERROR OF CORRELATION =  0.218

ESTIMATED INTERITEM CORRELATION IS  0.051

KUDER-RICHARDSON 20 RELIABILITY = ******

TEST MEAN =    4.68    VARIANCE =        1.56    STANDARD DEVIATION =    1.34



          DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

     PER CENT PASSING              NUMBER OF ITEMS

          0 - 19                         12
         20 - 39                         21
         40 - 59                         31
         60 - 79                         32
         80 -100                         24




          DISTRIBUTION OF THE TEST ITEMS
    IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

          CORRELATIONS    NUMBER OF ITEMS

         NEGATIVE - .10          43
            .11 - .30            29
            .31 - .50            34
            .51 - .70            12
            .71 - .90             1
            .91 -1.00             1
```

```
ADDITIONAL TEST INFORMATION
```

Col. TV combined
120 items 2-scores + 5
(rounded to
integers)

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.534

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0.1

STANDARD ERROR OF CORRELATION =  0.378

ESTIMATED INTERITEM CORRELATION IS  0.029

KUDER-RICHARDSON 20 RELIABILITY = ******

TEST MEAN =   4.50   VARIANCE =      1.14   STANDARD DEVIATION =   1.25



            DISTRIBUTION OF THE TEST ITEMS
 IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

      PER CENT PASSING                NUMBER OF ITEMS

          0 - 19                           15
         20 - 39                           21
         40 - 59                           26
         60 - 79                           37
         80 -100                           21



            DISTRIBUTION OF THE TEST ITEMS
      IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

           CORRELATIONS     NUMBER OF ITEMS

          NEGATIVE - .10          50
              .11 - .30           33
              .31 - .50           26
              .51 - .70           10
              .71 - .90            1
              .91 -1.00            0
```

```
ADDITIONAL TEST INFORMATION
```

Film combined 120 items
Z-scores +5

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.544

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0.206

STANDARD ERROR OF CORRELATION =  0.209

ESTIMATED INTERITEM CORRELATION IS  0.042

KUDER-RICHARDSON 20 RELIABILITY = ******

TEST MEAN =    4.92   VARIANCE =        0.86   STANDARD DEVIATION =   1.04


             DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

      PER CENT PASSING            NUMBER OF ITEMS

          0 - 19                     17
         20 - 39                     15
         40 - 59                     28
         60 - 79                     39
         80 -100                     21


             DISTRIBUTION OF THE TEST ITEMS
     IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

         CORRELATIONS     NUMBER OF ITEMS

        NEGATIVE - .10          39
           .11 - .30            38
           .31 - .50            32
           .51 - .70             9
           .71 - .90             1
           .91 -1.00             1
```

```
ADDITIONAL TEST INFORMATION
```

control combined 120 it
z scores +5

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.518

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0.2

STANDARD ERROR OF CORRELATION =  0.213

ESTIMATED INTERITEM CORRELATION IS  0.057

KUDER-RICHARDSON 20 RELIABILITY = ******

TEST MEAN =   4.70   VARIANCE =      0.86   STANDARD DEVIATION =   1.04



             DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

   PER CENT PASSING            NUMBER OF ITEMS

        0 - 19                      16
       20 - 39                      23
       40 - 59                      31
       60 - 79                      25
       80 -100                      25



             DISTRIBUTION OF THE TEST ITEMS
     IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

          CORRELATIONS    NUMBER OF ITEMS

        NEGATIVE - .10          39
             .11 - .30          32
             .31 - .50          36
             .51 - .70          12
             .71 - .90           1
             .91 -1.00           0
```

```
ADDITIONAL TEST INFORMATION
```

Film, B+W, Col.T.V, Combined
120 items Z-scores + 5

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.543

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS 0.2

STANDARD ERROR OF CORRELATION =  0.137

ESTIMATED INTERITEM CORRELATION IS  0.041

KUDER-RICHARDSON 20 RELIABILITY = ******

TEST MEAN =    4.76   VARIANCE =       1.17   STANDARD DEVIATION =   1.14



              DISTRIBUTION OF THE TEST ITEMS
    IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

        PER CENT PASSING              NUMBER OF ITEMS

             0 - 19                       11
            20 - 39                       23
            40 - 59                       30
            60 - 79                       36
            80 -100                       20



              DISTRIBUTION OF THE TEST ITEMS
       IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

           CORRELATIONS    NUMBER OF ITEMS

          NEGATIVE - .10        30
              .11 - .30         58
              .31 - .50         29
              .51 - .70          3
              .71 - .90          0
              .91 -1.00          0
```

5

```
ADDITIONAL TEST INFORMATION
```

THIRD YEAR Pretest -all groups

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.462

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST IS

STANDARD ERROR OF CORRELATION =  0.164

ESTIMATED INTERITEM CORRELATION IS  0.042

KUDER-RICHARDSON 20 RELIABILITY =  0.142

TEST MEAN =    9.92   VARIANCE =      14.02   STANDARD DEVIATION =    3.74



                  DISTRIBUTION OF THE TEST ITEMS
        IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

             PER CENT PASSING            NUMBER OF ITEMS

                 0 - 19                        9
                20 - 39                       13
                40 - 59                       20
                60 - 79                       14
                80 -100                        4




                  DISTRIBUTION OF THE TEST ITEMS
            IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

                  CORRELATIONS    NUMBER OF ITEMS

                NEGATIVE - .10         26
                   .11 - .30           12
                   .31 - .50            8
                   .51 - .70           12
                   .71 - .90            2
                   .91 -1.00            0
```

```
ADDITIONAL TEST INFORMATION
```

THIRD YEAR Post A

all groups

```
THE MEAN DIFFICULTY OF THE ITEMS ON THIS TEST IS  0.537

THE AVERAGE ITEM-TOTAL SCORE CORRELATION FOR THE QUESTIONS IN THIS TEST I

STANDARD ERROR OF CORRELATION =  0.333

ESTIMATED INTERITEM CORRELATION IS  0.093

KUDER-RICHARDSON 20 RELIABILITY =  0.484

TEST MEAN =  22.80   VARIANCE =      69.51   STANDARD DEVIATION =   8.34



                 DISTRIBUTION OF THE TEST ITEMS
IN TERMS OF THE PERCENTAGE OF STUDENTS PASSING THEM

    . PER CENT PASSING           NUMBER OF ITEMS

          0 - 19                       14
         20 - 39                       43
         40 - 59                       46
         60 - 79                       63
         80 -100                       34



              DISTRIBUTION OF THE TEST ITEMS
        IN TERMS OF ITEM-TOTAL SCORE CORRELATIONS

            CORRELATIONS    NUMBER OF ITEMS

           NEGATIVE - .10          70
               .11 - .30           34
               .31 - .50           23
               .51 - .70           32
               .71 - .90           24
               .91 -1.00           12
```

APPENDIX C

SCRIPTS

CASE PRESENTATION FOR COLOR TV

CASE I

Mrs. S.Z., 26-year-old white married female, Gravida I, Para I. The menstrual history has been regular and normal since menarche.

The patient was first seen on February 4, 1966 for the complaint of irregular vaginal bleeding. The last normal menstrual period was December 20,1965 being the usual five day flow. The next episode of vaginal bleeding was on January 28, 1966 consisting of mere spotting, accompanied by some abdominal pain and backache. Dysmenorrhea did not normally accompany the patient's menses.

Pelvic examination performed on February 4, 1966 (44 days since last normal menses) at which time there was no evidence of blood in the vagina, the cervix was soft and bluish, the uterus was normal in size, and the adnexal structures were normal to palpation. Pregnancy test (Gravindex) was negative. The possibility of early oviductal pregnancy was entertained at that time. The next episode of vaginal bleeding was on February 16, 1966 and again consisted of mere spotting (approximately 60 days following her last normal menstrual period). Pelvic examination on February 18, 1966 revealed a minimal amount of blood in the vagina, cervix was soft and bluish, uterus was top normal size (however, no increase since last examination), left adnexa was palpably normal, and right adnexa was somewhat thickened and tender. There was also some tenderness associated with cervical manipulation. Repeat pregnancy test was negative. Culdoscopy is being performed to aid in the differential diagnosis for the patient's amenorrhea.

CASE II

Mrs. E.P., 33-year-old white married female, Gravida I, Para I. The patient's personal history reveals chronic pelvic pain and a possible presence of an abdominal mass in the left side sometime in the past.

The patient's menstrual history is that of being regular every 28-29 days and lasting for 4-5 days.

The patient had been treated for primary sterility (successfully), the pregnancy terminating as a Cesarean due to a cephalopelvic disproportion.

Pelvic examination performed at this time reveals the external genitalia and vagina to be within normal limits; the cervix is clean with no erosion; the uterus is anterior, normal size, and mobile; the right adnexa is normal to palpation, but the left adnexa contains a tender mass approximately 4X6 cm. in diameter. The patient is being culdoscoped as an aid in the differential diagnosis of the adnexal mass.

COMMENTS FOLLOWING SHOW #1, FILM #1

Stein-Leventhal Syndrome

During the five minutes after the show, the discussion will deal with the differential diagnosis, in this case taking up conditions which have to do with her main symptoms, namely oligomenorrhea, hirsutism and obesity.

In the differential diagnosis we will consider:

1. Adrenal hyperfunction causing an adrenogenital syndrome, due either to adrenal hyperplasia or adrenal tumor.
2. Cushing's syndrome, either of pituitary or adrenal origin.
3. Masculinizing tumor of the ovary
4. Simple obesity and genetic hirsutism.
5. Stein-Leventhal syndrome.

We will show how the combination of the hormone assays plus culdoscopy were helpful in making this differential diagnosis.

The normal 17-ketosteroid levels rule out adrenal hyperfunction.

The clinical findings rule out Cushing's syndrome. The culdoscopy was important in making a differential diagnosis among polycystic ovary of the Stein-Leventhal type versus ovarian cyst of other origin, recurrence of dermoid cyst or other tumors of the ovary.

The history and physical findings are against genetic hirsutism.

COMMENTS FOLLOWING SHOW #2, FILM #2

Induction of Ovulation

We will discuss the causes for infertility in this case, emphasizing that there were two important factors: 1. anovulation and secondly, a poor sperm count in her husband.

We will discuss the importance of evaluating the male factor as well as the infertility in the female and the overall prognosis, indicating that it is important to check all causes for infertility before treating any one.

We will then go on to methods for stimulating ovulation. In this case we will point out the value of wedge resection but will indicate that sometimes a beneficial result from wedge resection may wear off, and in these cases Clomiphene and Perganol may be used.

We will talk about the importance of following patients on Perganol therapy with vaginal smears and cervical mucus tests to pick the best time for intercourse and for adding the chorionic gonadotropin.

We will discuss the dangers of Perganol therapy, particularly the induction of enlarged cystic ovaries and multiple pregnancy.

We will indicate the value of culdoscopy in helping to establish the diagnosis of polycystic ovaries as the cause for the infertility for the female in this case and in determining whether she will be a satisfactory candidate for Perganol therapy.

CASE PRESENTATION FOR COLOR TV

March 2, 1966

CASE I

Mrs. T.F. is a 30-year-old Gravida 2, Para 3, Ab 0 married white female. Her first pregnancy terminated in the delivery of fraternal twins.

The patient was first seen in 1962 because of recurrent pelvic pain. A pelvic examination at that time revealed a left adnexal mass and the suggestion of nodularity in the uterosacral ligaments. The pain became progrssively more intense and in May 1962 an exploratory laparotomy was performed. The findings at the time of surgery was a left ovarian cyst with evidence of recent hemorrhage, in addition to mild peri-adnexal adhesions. The right adnexa was normal. Surgery consisted of a left oophorectomy, pre-sacral neurectomy, and appendectomy. The patient conceived shortly thereafter and following an uneventful pre-natal course delivered the above-mentioned twin gestation.

She then conceived a second time and delivered a normal male infant August 15, 1964. Following this she has had a recurrence of intermittent pelvic pain. Repeated pelvic examinations have revealed findings that were within the limits of normal. The most recent pelvic examination, however, revealed some right adnexal thickening and again the suggestion of studding in the utero-sacral ligaments. The cul-de-sac appears to be free.

The patient is being admitted for culdoscopy to rule out the possibility of endometriosis being the etiology of the pelvic pain.

CASE II

Mrs. C. R. is a Gravida 0, Para 0 28-year-old white female. The patient has been studied for primary infertility since February 1965.

Pelvic examination has revealed normal pelvic viscera. A hysterosalpingogram performed in March 1965 revealed bilateral patent fallopian tubes. The patient's husband's sperm count was within the limits of normal; however, he occasionally has difficulty with potency. The patient's CBC, pap smear, and thyroid index are also within the limits of normal. The patient's basal body temperature has been biphasic.

The patient is admitted for culdoscopy to delineate a possible silent factor for the patient's infertility.

COMMENTS FOLLOWING SHOW #3, FILM #3

Endometriosis

In the five minutes following the show we will discuss the differential diagnosis in patients with infertility associated with an adnexal mass.

We will discuss how culdoscopy is valuable in making the differential diagnosis of endometriosis versus other types of adnexal pathology.

We will discuss how endometriosis may cause infertility and will then proceed to a discussion of treatment of endometriosis with hormones, particularly pseudopregnancy versus surgical treatment for endometriosis.

COMMENTS FOLLOWING SHOW #4, FILM #4

Follicular Cystosis

We will again go over the differential diagnosis of patients showing the triad of symptoms of amenorrhea, abdominal pain and vaginal bleeding. We will go over the differential diagnosis of ectopic pregnancy, and indicate the value, but the limited usefulness, of the pregnancy tests in ectopic pregnancy. We will indicate the importance of culdoscopy in establishing the diagnosis.

We will discuss the etiology of follicular cystosis, indicating that it represents a failure in ovulation with continued stimulation of unruptured follicles. This may due to improper stimulation of the ovaries by the gonadotropic hormones or it may be due to a failure on the part of the ovary to respond properly to the gonadotropic stimulation. We will then discuss the treatment of follicular cystosis indicating the importance of correcting any underlying endocrine or metabolic disturbances which may result in improper gonadotropic stimulation of the ovaries.

We will also discuss the use of estrogen and progesterone in sequential therapy to put the ovary at rest. We will indicate the importance of medical treatment in such cases before resorting to surgery. We will point out how culdoscopy was valuable in making this decision.

SHOW NO. 1, FILM NO. 1

STEIN-LEVENTHAL SYNDROME

SCENE #1

CAMERA: Opens with 3-shot in O-R.

NARRATOR: The films you will see today were made by Dr. Howard Balin, Assistant Professor, OB GYN, University of Pennsylvania and Chief of the Gynecic Research Section of the Pennsylvania Hospital. This work has been supported in part by the Office of Education, H.E.W.

VOICE OVER

CAMERA: ON DR. BALIN - After narration, Balin completes a movement and turns to camera.

DR. BALIN: We have our first patient on the table now under anesthesia ready for this demonstration. While my assistants are adjusting the culdoscope and camera; I will explain some simple facts about the culdoscopic procedure which is a methodology of direct visualization of the internal pelvic viscera of the female by means of a medical telescope placed through the cul-de-sac with the patient in the knee-chest position.

LIP SYNC

TELEPROMPTER

CAMERA: MOVE TO PLACARDS

(There are 13 of these 1-1 through 1-13. See attached listing.) After Placard 1-13 return camera to Balin.

SCENE # 2
CUT TO
V.O.
PLACARDS
WITH
DR BALIN
VOICE
OVER
BUT SHOOT
AS LIP
SYNC TO
MATCH
ACTION

PLACARD NO. 1-1

MOUNT PLACARD COPY
ON BLOTTERS FOR
DR BALIN TO READ
VOICE OVER

SCENE 2
CONTINUED

DR. BALIN: This placard explains the indications for culdoscopic examination. (1st) listed is "essential" infertility, where all clinical studies are negative and yet there may be some silent factor such as adhesions around the oviduct, or ovary which are not otherwise discernable.

(2nd) - Ovarian neoplasms - which although evident by pelvic examination cannot be categorized with certainty as to the necessity for surgical intervention.

(3rd) - Oviductal pregnancies which either have not ruptured as yet, or which have been recently aborted through the fimbriated end of the tube. Neither of these entities give a clear clinical picture and endoscopy may greatly aid the clinician.

(4th) - Instances of unexplained pelvic pain where the clinician cannot by bimanual examination delineate the cause. Such may be the case with endometriosis and chronic inflammatory disease of the pelvis.

(5th) - Another indication for culdoscopy is the clarification of certain endocrine dyscrasias associated with amenorrhea and hirsutism which imply a derangement on the part of the ovary.

PLACARD NO. 1-2

As important as these indications for culdoscopy are, the contraindications for the procedure must be kept in mind. Not in every instance is it possible to safely perform the procedure.

DR. BALIN:
cont'd

SCENE 1-2
CONTINUED

1) Certainly if the cul-de-sac is obliterated due to any type of pathology, the procedure should not be attempted.

2) Any infection in the reproductive tract contraindicates the procedure.

3) Any condition that contraindicates the knee-chest position (which is a requisite for the procedure) contraindicates culdoscopy.

May I have the next placard, please?

PLACARD NO. 1-3

Placard No. 1-3 demonstrates an overview of the position the patient actually assumes for culdoscopy. In this position the anterior abdominal wall falls forward toward the operating table and the intestines are displaced from the pelvis toward the diaphragm. Once the speculum is placed within the vagina, atmospheric pressure being greater than intraperitoneal pressure causes the vaginal mucosa to herniate between the uterosacral ligaments, as will be detailed in the next placard.

PLACARD NO. 1-4

This placard indicates the position of the trocar and cannula ready to puncture the posterior wall of the vagina. The site chosen for puncture is in the hollow between the uterosacral ligaments.

PLACARD NO. 1-5

The next placard illustrates a lateral view of the pelvis showing the trocar penetrating the cul-de-sac of Douglas. The anatomy of the pelvic organs is here illustrated diagrammatically.

DR. BALIN: PLACARD NO. 1-6
cont'd

SCENE 2 CONTINUED

This next placard shows the pelvic endoscope in place. Before going on with our case review for today, ~~and an actual~~ c~~uldoscopic film~~, let us review some pertinent points as regards the instrumentation required to achieve the same. May I have the next placard, please?

PLACARD NO. 1-7

As regards the performance of photographic culdoscopy an endoscope with a cold but brilliant light source to obtain optimal illumination is required, such as the fiber optic culdoscope which is shown here. Also shown is a light weight reflex 16 mm motion picture camera and a 35 mm still camera. (T.V. cameras can also be used with this equipment).

PLACARD NO. 1-8

Let us now review some cogent differences in the anatomic position of the several internal pelvic organs as reviewed via culdoscope versus views of the same anatomy at time of laparotomy. The culdoscope views the pelvis from a posterior aspect giving an entirely different overview of the pelvic organs than seen at time of laparotomy which is presently shown. Note the arrangement and sequence of the round ligaments, the fallopian tube and ovarian ligaments as well as the bladder, rectum, and the cul-de-sac. This diagram is, of course, idealized. In the anterior view we do not usually see the ovaries until the uterus and tubes are retracted as shown.

May I have the next placard, please?

DR. BALIN: cont'd

SCENE# 2 CONTINUED

In contradistinction, this placard illustrates the anatomical relationship of the pelvic organs seen via the culdoscope. Several points of differences should be evident:

The first organ that usually comes into culdoscopic visualization is the posterior surface of the uterus and the ovaries. Usually the fallopian tubes are obscured in their proximal ends 1 to 2 thirds by the ovaries, and only their distal or fimbriated ends can be visualized. Superior to the uterine fundus the anterior cul-de-sac can be seen. Not infrequently a portion of the large and small intestines can also be seen. By manipulating the uterus by means of palpation through the abdomen or by means of traction on the cervix, even a greater portion of the pelvis can frequently be visualized.

May I have the next placard, please?

PLACARD NO. 1-10

This is the close-up view of the relationship between the fallopian tube and ovary.

CUT HERE

SCENE# 3

A V

CAMERA: CUT TO DR. BALIN

DR. BALIN: SYNC

While my assistants are adapting the camera to the culdoscope, I would like to give the history of the patient we have selected for the presentation today.

TELEPROMPTER

Instructions for Mr. Lopatin:

With this history, inter~~digitate~~ cut three placards:

Placards:

#1-11) Chief complaints

#1-12) Pelvic findings

#1-13) Differential diagnosis

SCENE IS
CONTINUED
IN SYNC

DR. BALIN: Mrs. M.F. is a 28-year-old white female who was first seen in my office 4 years ago because of amenorrhea of 2½ months' duration associated with abdominal enlargement and pain.

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PLACARD NO. 1-11

Pelvic examination at that time revealed a right adnexal mass measuring 8 x 10 cm. in diameter. The uterus was enlarged and there were several suggestive stigmata of early pregnancy. This clinical impression was confirmed by pregnancy test. Because of the large adnexal mass an exploratory laparotomy was performed. It proved to be a dermoid cyst of the ovary and an oophorectomy was consequently performed with care to leave the pregnancy intact. The patient carried this gestation up to the 38th week, at which time a cesarean section was performed because of abruptio placenta. Her recovery was without complications. Over the next several years the patient was seen because of 3 episodes of dysfunctional uterine bleeding which finally required a D & C.

PLACARD NO. 1-12

Subsequently she was followed because of oligomenorrhea with menstrual intervals of 2 to 3 months and complaints of excessive facial hair and a weight gain of 30 pounds over a one year interval of time. Her last menstrual period was approximately 3 months ago.

DR. BALIN: cont'd. Pelvic examination prior to this admission revealed a uterus normal in size, anterior in position and freely mobile. The left adnexa was enlarged 2 to 3 times normal in size. Her preoperative CBC, urinalysis, PBI, pap smear and 24 hour urinary essays for 17 ketosteroids and gonadotrophins were all found to be within normal limits.

SCENE # 3 CONTINUED

TELEPROMPTER

Culdoscopic examination is being performed in an effort to clarify the significance of the adnexal mass especially in view of her accompanying symptomatology.

PLACARD NO. 1-13

Prior to our joint viewing of her actual pelvic findings as viewed through the culdoscope, let us review our differential diagnosis. Primary amongst these is of course, (1) Recurrence of a dermoid cyst. (2) Polycystic ovary. Certainly, her symptomatology is suggestive of the Stein-Leventhal syndrome. And finally, (3) we have to think of ovarian cysts of other origins. SCENE # 4 GETS SHOT TWICE - ONCE WITH M.P. CAMERA
" " TV "

SCENE # 4
.S DR BALIN

Now, let us go to the scope and actually take a peek together.

CAMERA: FOLLOW BALIN AS HE MOVES OVER TO WAN AND FETTIG AND TAKES THE CAMERA FROM THEM AND COMMENTS. STAY WITH HIM FOR NOW.

DR. BALIN: The endoscopic films that you are about to see were obtained by means of this 16 mm. reflex cine camera which was made in France and bears the name of Beaulieu. It is extremely lightweight and is truly reflex in its function which makes it ideal for this procedure. What you are about to see on your screen is the pelvic viscera as they exist~~s~~ in this patient.

CAMERA: CUT OUT AND SWITCH TO CULDOSCOPIC FILM #1 (M.F.) 2½ min.

SHOW NO. 1 - CULDOSCOPIC FILM NO. 1

VOICE OVER RECORDED TO FILM -

DR. BALIN: The first thing that we see in the field is the posterior aspect of the uterine fundus. You note that its configuration, for the most part, is smooth and devoid of any subserosal fibroids. In the upper lefthand part of the field is the left ovary. It appears to be somewhat sclerotic. As I inspect its surfaces more carefully, I can not see any specific site of follicular function nor any recent site of ovulation. A good part of the ovary, one half as you can see now, seems to be obscured by the overlying intestine. The pulsating area seen in the upper portion of the field is the small bowel. I am now going to cross over to the contralateral adnexa, over the top of the fundus to see if I can visualize the right adnexal region. As you recall, the right tube and ovary were removed some years ago. The right ovarian fossa appears clean and occupied for most part by the cecum. Note the several haustrations that identify this as large bowel. We are now coursing over the right ligament and over the top of the uterine fundus again to take a closer look at the remaining left ovary. Here we are in the area of the infundibulopelvic ligament again and now on the left ovary. Although a couple of subcortical follicles can be visualized, for the most part the surface of the ovary looks very smooth and devoid of corrugations. My first guess in a case like this with the patient's symptomatology and with these visual findings, is the Stein-Leventhal syndrome.

PLACARD # 1-1

INDICATIONS FOR CULDOSCOPY

1. "Essential" infertility
   - a. Ovarian factor
   - b. Tubal factor
   - c. Peritoneal factor
     (Tubo-ovarian space)
2. Ovarian neoplasms
   (Boarderline in size)
3. Oviductal pregnancy
   - a. Unruptured
   - b. Tubal abortion
4. Unexplained pelvic pain
   (Endometriosis, chronic P.I.D., Tbc, etc.)
5. Endocrine dyscrasia involving reproductive tract
   (Amenorrhea, hirsutism etc.)

SHOW NO. 2, TV NO. 2.

Induction of Ovulation

At 3:00 PM, the sound from the truck will be activated and Dr. Balin will speak.

DR. BALIN: (off screen)

(Ask Dr. Rakoff by two-way radio if we can turn on the TV since everything is ready for the second case.)

DR. RAKOFF: Respond into your mike affirmatively. Be certain your class hears you also.

VIDEO TAPE: SCENE STARTS BY SHOWING DR. BALIN ON THE TV MONITOR SCREEN.

DR. BALIN: This patient is well-known to Dr. Rakoff and me since we have prepared her for this presentation. She is of particular interest since her case involves the history of anovulation and she has been put upon ovulation inducing medications in this cycle. Culdoscopy is being performed to ascertain the effectiveness of medication. Prior to discussing the details of this patient's history and our culdoscopic viewing, I would like to elaborate briefly as regards the general values of pelvic endoscopic examination in the study of a patient with complaints of oligomenorrhea and infertility.

VIDEO TAPE: SHOWS PLACARD NO. 2-1

DR. BALIN: Primarily the value of the culdoscope examination is its ability to directly visualize the ovary and other contents of the pelvis.

1. Primary ovarian failure
   a. Gonadal dysgenesis
   (Absence of ovaries, streak ovaries, Turner's syndrome, etc.
   b. Atrophic ovary

2. Secondary ovarian failure
    a. Stein-Leventhal (polycystic) ovary
    b. Ovarian pathology secondary to:

       Chronic P.I.D., endometriosis, pelvic Tbc., neoplastic disease, etc.

DR. BALIN: Before reviewing the patient's history, I would like to review the types of gonadotrophic substitutional treatment now available for the treatment of the anovulatory female.

VIDEO TAPE: PLACARD NO. 2-2

DR. BALIN: Illustrates the two types of human gonadotrophic hormones available for FSH substitutional therapy.

In general these substances are either extracted from the human pituitary gland obtained at autopsy (HPG) or more conveniently from the urine of menopausal females (HMG).

FSH, as you will recall, will stimulate the growth of antral follicles. It requires, however, combination with LH to induce ovulation. This is obtained in abundance from the urine of human pregnant patients and it is termed HCG. Combination of these human gonadtrophic substances, FSH and LH, in indicated cases will induce ovulation over 50% of the times.

VIDEO TAPE: PLACARD NO. 2-3

DR. BALIN: Parameters for evaluation of ovarian response following HMG/HCG therapy:

1. Vaginal smears
2. Cervical mucus indices
3. Urinary estrogen levels
4. Urinary pregnanediol levels
5. Basal body temperature
6. Daily pelvic examination

While my assistants are adjusting the culdoscope and the TV camera, I will show one more placard which illustrates a text

DR. BALIN: cont'd. book type of cycle in which ovulation was induced by treatment with HMG and HCG.

VIDEO TAPE: PLACARD NO. 2-4

DR. BALIN:

1. The dosage and time regimen of HMG and HCG
2. The ovarian size by daily pelvic examination
3. Urinary pregnanediol level in pre and post ovulatory phase
4. Findings of the vaginal smear shows the karyopyknotic index which reflects the estrogen response and the folding index which depicts the effects of progesterone.
5. Basal body temperature shows a biphasic curve.

I will leave this placard on for awhile since this chart lists the time-dosage regimen and you will have an opportunity to copy it down if you wish to.

DR. BALIN: Now, I will present a brief history of this patient:

Mrs. E. T. is a 34-year old white female, G.-0. She and her husband have had long-standing infertility problems. In 1964 the patient had a wedge resection of the ovaries because of ovulatory difficulties associated with polycystic disease of the ovaries. After the operation, she had experienced ovulatory cycles for a short period of time. However, pregnancy probably did not result because of the oligospermia of her husband. Later, oligomenorrhea recurred in this patient. No ovarian enlargement was noted at this time and the complete endocrinologic workup was within normal limits. No hirsutism nor obesity had been noted in this patient.

DR. BALIN: Prior to this present admission, she has been on Pergonal (HMG) therapy for 8 cycles. Before going further on medication, culdoscopy was decided upon to determine visually if gonadotrophic therapy was effectively producing ovulation and to rule out other peritoneal factors that might contribute to the patient's persistent infertility.

Similarly to what is showing on this placard in this current treatment cycle she received the Pergonal or HMG 150 I.U. daily from C.D. 5 to C.D. 13. In addition to the Pergonal, she also received HCG, 5,000 I.U. for the last three days of her Pergonal therapy. Today is her C.D. 13 and she had her last injection of Pergonal plus HCG this morning. We will see in a minute the response of her ovaries to the Pergonal treatment. According to the findings of the daily vaginal smears and cervical mucus, there has been good estrogenic response.

As her previous hystosalpingograph revealed evidence of peritoneal adhesions, I will perform the methylene blue test at the end of our demonstration. My assistant has already inserted the canula for the injection of the methylene blue. We will have a review of the same pelvic cavity before the injection of the dye.

VIDEO TAPE: SHOWS BALIN TAKING OVER TV CAMERA (HOWARD, MUMBLE HERE)

DR. BALIN: Now, you can switch to the miniature camera.

VIDEO TAPE: SHOWS CULDOSCOPE FILM.

DR. BALIN: (off screen) (In synchronism with culdoscopic film)

I have the camera directed at the left ovary with a follicular cyst on it. This is the left tube showing a normal contour of the tube and normal appearance of its fimbriated end. I am moving to the other side - the right adnexa. There is the uterus, which appears to be normal in size and shape. Here on the surface of the right ovary you can see a hemorrhagic area which probably represents a fresh ovulation site. You also can see the peculiar shape of this ovary, most probably due to a previous wedge resection. We are seeing the left ovary again. There are several what appears to be follicular cysts on the surface, but no specific ovulation. Here is a close-up of a follicular cyst. The canula is blocking the lens. Let me try it again. Ah! Here we are. Now we are on the right ovary again. A piece of omentum is adherent to the right ovary. Now, I will fix my camera at the left tube meanwhile injecting some methylene blue dye through the cervix and therefore we can continuously watch for the dye emanating from the fimbriated end of the tube. How many cc's are in now?

DR. WAN: (off screen)

10 cc's Dr. Balin

DR. BALIN: (off screen) - (pause for a minute)

Well, I do not see the dye coming out from this end of the tube. Let's see if there is anything on the other side. Here you can see the blue dye which came out from the other side of the tube and stained the whole background of the peritoneum. Let's look at the left tube again and see if there is any dye coming out from it. No, there isn't. Interestingly, although the appearance of this tube is perfectly normal, you can see there is no dye emanating from this fimbriated end. I think this is enough. You can turn off the TV camera now.

VIDEO TAPE: SHOWS BALIN ON-SCREEN

DR. BALIN: As you recall, this patient had a course of Pergonal and HCG treatment. Today is her C. D. 13 and the last day of her HMG/HCG combination therapy. We have been fortunate indeed to observe a single fresh ovulation site. As you are aware, the possibility of multiple ovulation when using this regimen is rather high. You have also seen several follicular cysts on the other side of the ovary. We can not rule out the possibility of additional rupture of the follicle in the days to come.

Dr. Rakoff, would you like to discuss this case a little further now.

SHOW NUMBER THREE

ENDOMETRIOSIS

DR. RAKOFF: (Addressing Students) You will recall that last week Dr. Balin presented us with two cases having culdoscopic examinations. One case was a Stein-Leventhal Syndro~~n~~me; and the other, one of ovulation induction. Today, he has two more cases scheduled for pelvic endoscopy. Dr. Balin are you ready with your first patient?

DR. BALIN: (Announces to Dr. Rakoff that all is ready.)

SCENE: Dr. Balin on T.V. screen

DR. BALIN: While my assistants are making the final adjustments of the culdoscopic and T.V. camera, I will present a summary of the patients history.

Mrs. M.T. is a 29 year old white female seen for the first time 5 years ago for primary infertility. The past medical and surgical histories were non-contributary other than an appendectomy. Her menarche was at age 12 and normal menstruation occurred regularly every 28 days, lasting for 3 days -- with occasional dysmenorrhea.

?

Physical and pelvic examinations revealed no abnormalities. Laboratory studies including: CBC, Urinalysis, Endometrial biopsy, PBI, BMR, 'Pap' smear, and Rubin test were all normal.

The husband's semen analysis revealed a decrease in count and motility - otherwise normal.

The patient was instructed to initiate a basal temperature chart, the husband was placed on Cytomel, and intercourse advised at the estimated time of ovulation. The patient conceived on this regimen, but terminated as an Incomplete Abortion for which a D & E was performed. Following this the patient again was unable to conceive and the previously mentioned therapy was re-instituted. Fortunately she conceived and a term normal pregnancy resulted. The patient was very anxious to immediately conceive again, due to the advancing years of ~~she~~ her and her husband. When spontaneous conception did not occur, she again sought advice.

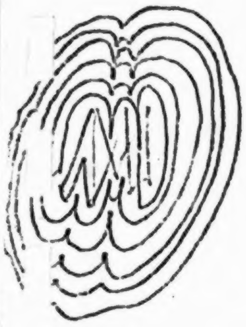
Pelvic examination revealed normal findings. A hysterosalpingogram showed tubal ~~pating~~ PATENCY and the suggestion of a right adnexal mass; and the suggestion of a collection of dye about this area, despite negative findings by palpation. To exclude anovulatory menstruation, Estriol, Pregnandiol, and

Gonadotrophins levels were obtained and found to be normal. Culdoscopy was then advised to help clarify the cause of her infertility. The differential diagnosis here should include the factors presented on placard # (3-1).

SCENE:
Dr. Balin :

Dr. Balin at placard # (3-1)

A discussion of the factors associated with "Essential" infertility includes: the tubo-ovarian function of ova ~~collection~~ pick-up at the time of ovulation. A previous episode of pelvic infection may have destroyed the fimbria of the tubes. Pelvic adhesions may have been produced by a previous pelvic infection, or abdominal surgery, or endometriosis. Endometriosis may also produce an endometrioma which would preclude the normal tubo-ovarian relationship. Tuberculosis also must be considered even though the incidence is quite low in our country.



Another factor to be looked for would be conditions associated with anovulatory menstruation. The parameters for establishing ovulation leaves much to be desired. The visualization of the site, at a prescribed time in the cycle is conclusive evidence of ovulation. ~~This~~ Ovulation may be prevented by such conditions as: follicular cystosis where the high level of estrogen suppresses formation of adequate lutunization hormone. Another condition preventing ovulation is found in a prematurely aging ovary as evidence by its decreased size and deeply furrowed and thickened surfaces. Stein-Leventhal ovaries is also associated with anovulatory bleeding, and may be visualized before they become enlarged to palpation. Iatrogenic factors also must be considered when there is no visible evidence of ovulation - this would include medications taken for other systemic disorders that contains steroids capable of ovulation suppression. Another factor to consider is a defect in gamete transportation. This must be considered when the culdoscopic findings are negative. For if there is conclusive evidence of ovulation and there is no external tubal damage, either the ova is not being transported through the tube or the sperm are being destroyed prior to their entrance into the tube. This is seen in cases of hostile cervical secretions, (even though the cervix appear to be normal). Also intraluminal oviductal adhesions may narrow the lumen somewhat - adequate for passage of gas in a Rubin test, but not sufficient for ova passage. The immunologic factor also . . .

When all findings are negative one must consider an under-lying psychogenic basis for the infertility. The patient's statement she desires to become pregnant may not be her real desire.

The instrumentation appear to be in order let us now turn to the culdoscopic findings.

SCENE: Balin takes over the camera from Dr. Fettig and Dr. Wan

DR. BALIN: Would you please switch to the miniature camera now!

SCENE: Culdoscopic film (M.T.)

DR. BALIN: (Off screen)

You can see there is a black spot on the surface of the left ovary. This is a typical endometriotic implant on the ovary. Here is the left tube which appears to be normal. No abnormal pelvic mass in the left adnexal region. The surface of the ovary appears to be normal except for this endometriotic implant. Now, let's move over to the other side of the adnexa to see if we can find any interesting things. Here is the right ovary which is normal in size. You can also see the normal corrugation on this surface of the ovary. Behind the ovary is the tip of the fallopian tube. We do not see any abnormal pelvic mass in the right adnexal region. Now, you can turn off the [illegible] camera.

DR. BALIN (Addressing Class):

You have seen demonstrated here a patient with pelvic endometriosis despite a history and clinical findings to the contrary. Let us now refer to placard #3-2 + #3-3 for a discussion of pelvic endometriosis.

Dr. Balin on 2/26/66

"Endometriosis"

Endometriosis in the broadest sense may be defined as the presence of Endometrial or (Endometrial-like tissue) outside its normal location; which of course is the lining of the uterus (the Endometrial cavity). Should these islands of tissue be located outside the uterus, then we call the disease Endometriosis externa. If islands of Endometrial tissue invade the myometrium then the disease process is called Adenomyosis. In both instances the Endometrium about which we are speaking is functional and responds to both estrogen and progestational stimulation. The implants in the pure sense pathologically must contain both Endometrial glands and stroma, before the pathologist will give you a histo-pathologic diagnosis with assurity of Endometriosis. Endometriosis is a disease that has been reported to be increasing in frequency in the last two decades. Whether this is an absolute increase due to delay in childbearing, or whether this is more a relative increase due to the diagnostic acumen of the Gynecic Clinician is still debated.

Endometriosis is found in about 5 to 15% of all pelvic Laparotomies and indeed many of these laparotomies are not necessarily performed because of suspected Endometriosis. It is found more frequently among Caucasions and more frequently in the mid- child-bearing era (in the 3rd and 4th decade, that is between 20 and 40 years of age), and is associated with delayed motherhood and infertility. In that the disease frequently is greatly palliated by the presence of pregnancy, it has been postulated that uninterupted cyclic menstruation of longer than five years tends to predispose to Endometriosis. Indeed those socioeconomic groups whereby educational level delays marriage and childbearing, do bear the greatest number of patients. This is a disease primarily of private patients. Now as regards the histogenesis and the etiology of Endometriosis; the more theories there are regarding any disease process probably one case assume that the actual etiology is still unsettled; this is so with Endometriosis. There are three theories, however, that you should have for your notes. The most commonly excepted theory is that of Sampson, whichespouses retrograde migration of Endometrium through the oviducts. Dr. Sampson rather vividly describes the pathogenesis as follows; he felt that at the time of menstruation the menstrual debris could be refluxed back into the tubes and as attached to the fimbria would implant on the closest geographically located organ; and indeed this is the ovary. Actually this does bear out clinically, for most of the implants even in diffuse cases of Endometriosis are found in the ovary.

SLIDE #1

This diagram shows the most common sights; (and certainly Endometriosis in the pelvis is explained most easily by Sampson's theory), when the implants are limited to the pelvis. How about the implants that are found in the distant foci: in the arm, the leg, the lung, occasionally in a laparotomy scar, or the umbilicus. Well it's pretty hard to see how retrograde menstruation through the oviducts could account for these implants. A lucid theory to explain these ectopic, distantly located implants is that of Halban. Halban showed histopathologically (and this has been confirmed by Geese and others) that Endometrial tissue can be found in lymphatics and veins. This certainly would explain some of the distant sights of ectopic Endometrial implants. Still another loose theory was formed in the 1920's by Dr. Robert Meyer. Dr. Meyer's theory is that of coelomic metaplasia. He likes to point out that the tissue of the peritoneal cavity (or the peritoneum itself) and that of the reproductive tract, both are derived from similar enbryonic off-shoots, both of them are derivatives of coelomic mesothelium, and consequently that it is not too far fetched to believe that metaplastic processes can be stimulated by which the serosal linings of the pelvic organs or (indeed the pelvic peritoneal cavity itself), cannot house Endometrial-like tissue derived by metaplasia, rather than by retrograde flow through the tubes. The areas most frequently involved in Endometriosis are those that are closest to the tube. In about 50% of the instances the ovaries are involved, and as one might expect if one sees the position of the tube here, that the blood may tend to course down the posterior surface of the uterus into the cul-de-sac so that we frequently see associated implants in these areas as well as in the utero-sacral ligaments. Invasion occasionally occurs into the recto-vaginal septum and into the bowel that surrounds the adnexa, to the sigmoid more frequently, but occasionally into the cecum, and in the appendix. Ectopic sights are sometimes also seen in the umbilicus and in an abdominal scar, and rarely we have invasion through the uter-vestical peritoneum into the bladder. Now interestingly although the disease is metastatic and is proliferative, it is begnign in most instances. There had been reports whereby the Endometrial tissue in these implants does have a disposition to become malignant, but certainly no greater that it would in its normal sight.

Now as regards to symptomatology of the disease. Please be aware that they're not always necessarily present in the same patient and be further aware that frequently the disease will exist with very few if any symptoms. To some degree this is dependent upon where the ectopic Endometrium locates itself, if it locates itself fortuitously in an area that is blessed with a great nerve supply (such as in the recto-vaginal septum), one has a great deal of pain; indeed if it locates itself on the parietal lateral pelvic walls, there may be no pain. Well the most common symptomatology then, is dysmenorrhea. Dysmenorrhea is usually of secondary nature; this implys that the patient has previously had normal painless menstruation and that sometime later in her menstrual life that progressive and secondary painful menstruation ensues. This pain is frequently described as deep, and is usually intractable, and in some instances progressive. Secondary to dysmenorrhea is dyspareunia, or painful intercourse, involvement here in lower portion of the peritoneal cavity especially the utero-sacroligaments, the cul-de-sac and a recto-vaginal septum, making intercourse extremely painful for the patient. Rectal pain on bowel movement is called dyskesia, and this is almost pathognomonic of the disease.

Infertility is the singular symptom of Endometriosis; and infertility here probably on the basis of the chemical peritonitis and the periadnexal adhesions, fixation of the ovary, fixation of the oviduct, so that approximation of tubo-ovarian relationships are distorted so that ovum pickup does not occur. And interestingly the tubes are usually patent with Endometriosis, the disease when it invades the tube usually invades from the serosal surface, only rarely do we find Endometrium in the muscularis, when it does we have a syndrone very similar to Adenomyosis; to locate itself in the interstitial portion of the tube (or the cornual portion of the tube) there are some pathologists who will describe this desease as salpingitis isthmica nodosa.

Now as regards to classic pelvic finds there are three. You're probably going to realize that your physical examination should consist (in addition to your general physical) of an abdominal examination. In some instances you will find stigmata of Endometriosis in old scars, occasionally in the umbilicus, if there has been a recent rupture of an Endometrioma there may be chemical peritonitis and signs of rigidity (or rebound tenderness) to the presence of blood inside the peritoneal cavity. As regards to bimanual pelvic examination, classically the fixed retro-displaced uterus, although indeed in clinical practice, one is not overly impressed by this symptomatology. I'd say more times than not in clinical practice this uterus can be anterior. In the advanced disease process, usually there is a fixed retro-displaced uterus, enlarged fixed ovaries sometimes can be palpated these are extremely tender, and cannot be mobilized, by the vaginal exploring finger to the abdominal hand. Cul-de-sac nodularity or utero-sacral nodularity is probably the single most pathognomonic sign on pelvic examination. The findings of your bimanual pelvic examination, you get a better evaluation of your cul-de-sac implants and certainly you get a better evaluation of any recto-vaginal involvement.

As regards to the therapy of the disease, I think it's important to point that prophylaxis is perhaps the most important thing. In that this is a disease entity of higher socioeconomic groups that if one can (for purposes of pre-marital guidance), inform the female of the instance of sterility in the general population being 10 to 15%, and the incidence of Endometriosis being quite high in the woman who delays child-bearing perhaps we can help prevent this disease. It would appear that interruption of cyclic menstruation will tend to prevent this disease. Now as regards to two types of therapy, one is palliative and the other is definitive. There are four or five factors that predicate whether your going to use a palliative or definitive therapy. This depends upon the age of the patient, upon her desire for future childbearing, the extent of the disease, and the severity of the symptoms, and the parity of the patient, of course. Certainly if the patient is young and she desires future childbearing and she's had no children one is apt to use therapies in the palliative area. There are tow types of palliative therapy that avail themselves to the clinician; one is surgical in its intent, and the other is medical hormonal. Indeed I think there is a growing popularity to use number two first; that is to use hormonal therapy first, but I would beseech the student and the clinician prior to either, to make the diagnosis. Now the types of hormonal therapy that are available to you, involve the gamete of ovarian steroids. Estrogen and progesterone and you recall that by abnormal ovarian steroid genesis, also you can have androgenic type of substances. I think that of the three the one most preferable today and most used, is the synthetic progersterone like substances the progestogens. I think you should have some idea as to what we are aiming at with such therapy. We are aiming usually at a pseudo-pregnancy state, whereby we prevent menstruation and ovulation. Prolonged progestational therapy causes a decidual like reaction in the tissue. It has been pointed out by some, (and actual pathologic confirmation) recently that actually a necrobiosis occurs within this tissue. Kistner, who introduced this type of therapy in about 1956 espouses that almost all patients who would be desirous of future childbearing, go through a course of hormonal therapy (of Pseudo-pregnancy). This therapy if it be like a Pseudo-pregnancy obviously would be given for a period of 6 to 9 months. Another form of therapy is the use of an injectable depoprovera, Medroxiprogesterone. This is given to the patient who cannot tolerate the oral form because of the nausea. Estrogens and androgens where given early in the hormonal therapy era. Estrogen therapy was based on the fact that it can in relatively small doses suppress the pituitary, and therefore suppress ovulation. As far as androgens, androgen therapy was popular for a long while and still is in some areas. Androgen negating by competing (negating the effect of estrogen-progesterone) for the same enzymatic systems. Androgens still by competing can be given in cases whereby the Endometriosis is not too severe, and you wish to maintain the fertile capacity of the patient. If hormonal therapy fails, or indeed if the tumors that are associated with Endometriosis, require exploration then one is given to a preference to conservative surgery. And the object of conservative surgery is local removal of the implants with the retention of ovarian childbearing function. An important part of the procedure also for conservative surgery is the replacement of the uterus into an anterior position, getting the retro displaced fixed uterus out of the cul-de-sac is an important point to overcome the dyspareunia that is experienced by some of these patients, in the young age group.

Now as far as definitive therapy. Definitive therapy obviously involves removal either hormonally or surgically, of the source of ovarian steroids. As regards surgical castration, this would fit the type of patient who is over 35, who has had her family, where there is extensive envolvement, (as regards to pelvic pain and perhaps irregular uterine bleeding). Total hysterectomy should be performed if possible. Occasionally, this is not possible, because of the dense adhesions, and is one of the rare instances, whereby the Gynecologist would take recourse to sub-total hysterectomy.

PLACARD #3-1

FACTORS ASSOCIATED WITH "ESSENTIAL" INFERTILITY

1. Interference with ~~the~~ ovum pick-up mechanism

   Periadnexal ~~(tubo-ovarian space)~~ adhesions due to:

   Chronic P.I.D., endometriosis, pelvic Tbc, ~~post~~ previous pelvic surgery etc.

2. Anovulatory menstruation

   a. Follicular cystosis

   b. Early ovarian failure

      Premature senescense, early Stein-Leventhal syndrome

   c. Iatrogenic factors

3. Defects in gamete transportation

   a. Hostile "normal" cervical mucus

   b. Immunologic factors

   c. Intrluminal (uterine or oviductal) defects

4. Psychogenic factors

Placard #3-2

List of the common sites for endometriosis

Placard #3-3

Illustration of Endometriotic Sites.

SHOW NUMBER FOUR

FOLLICULAR CYSTOSIS

DR. BALIN: To call Dr. Rakoff informing him that the second case is ready for T.V.

DR. RAKOFF: Gives his o.k. (and a discussion)

SCENE: Shows Dr. Balin on T.V. screen

DR. BALIN: The next patient being ready - we will attempt to use the culdoscope as an aid in differentiating pelvic pathology requiring abdominal surgery from that in which it is not indicated. This patient we are going to present, we actually have her ready for double set up, in that she had pelvic findings and suggestive of possible ovaductual pregnancy. Indeed, our suspicions are not to the point where we would intervene by laparotomy until we have visualization. This is to point out that we are suspicious of either an early tubal abortion or un-ruptured ectopic pregnancy. I feel that it is appropriate with what I see, for me to spend some time speaking with your students.. I guess I have given the diagnosis away by saying this but I realize that this was an acute surgical emergency and we would have to cancel this program.

This case particularly points out another value of the culdoscope that perhaps has not been stressed in previous presentations and that is occasionally in preventing some exploratory laparotomies. Certainly in days gone by, exploratory laparotomy in instances of ovaductual pregnancy were more than justifiable. Since the advant of the pelvic telescope, the gynecologist has a very valuable ajunctive procedure for exploring the pelvic cavity without the necessity of making abdominal incision. In this way, we can save the patient some of the ills of the abdominal approach.

At this point, I should like to present this patient's cas history. Mrs. S.Z. is a 27 year old white female seen in the office yesterday for the complaint of irregular vaginal bleeding and pelvic pain. The past medical history is negative. The past surgical history consists of an appendectomy at age 10. Her obstetrical history consists of one uncomplicated vaginal delivery 9 years ago. The patient's menarche was at age 11, and her menstrual periods were regular every 28 days and lasting for 5 days until the present episode. The last normal menses had been 60 days prior to the examination in the office. The present episode of bleeding has consisted of three days of spotting accompanied by vague lower abdominal pain. Pelvic examinations in the office and at present under anesthesia reveal a moderate amount of blood oozing from the cervical os; the portio is soft and cyanotic; the uterus is top normal in size, anterior and mobile; the left adnexa is normal while the right side is somewhat thickened and tender.

Pre-operative laboratory studies including a CBC, urinalysis, pap smear were negative. An immunologic test for pregnancy yesterday was also negative. My assistants indicate that the pelvis is ready for ~~residuation~~ visualization, so let us turn to the camera for a few minutes.

~~Because of the circumstances, I think I should go right to the visualization. I have some placards that may be valuable to show as regarding the differential diagnosis of ovaductual pregnancy. I think however, that perhaps since I know what the patient has; I should go to the patient first and then we will go to placards which my assistant is now arranging..~~

SCENE: Dr. Balin takes over the camera from assistants

DR. BALIN: Now, you can switch to the miniature camera.

SCENE: Culdoscopic film (S.Z.)

DR. BALIN: (Off screen)

The first thing you note is that there is no blood in the peritoneal cavity. Here on the screen is the left tube which is of normal calibre and no evidence of oviductual pregnancy. You can see now two rather large follicular cysts on the surface of the left ovary. With cysts of this size, we do expect some hormonal imbalance. This probably could explain her vaginal bleeding and pelvic pain. This is a better view of entire length of the left oviduct which is perfectly normal. Now, I am moving over to the right adnexal region. You also can see several ~~of~~ [illegible] ~~type of~~ cysts, but much smaller than the other side. I can not get under the ovary to show you the tube but apparently there is no space occupying lesion in this adnexal region. ~~Now, you can turn off the T.V. camera~~.

I think you can see now that the diagnosis of the patient with follicular cystosis. The progressive or sequential formation of the follical cyst probably are what attenuated or prolonged her menstrual cycle with waves of persistent estrogen. We can hypothecate that the reason she started to bleed was that her estrogen level dropped and her endometrium shed. However, follicular cystosis is a benign disease that may occur in many instances wherein we have no evidence except perhaps anovulatory menstruation. As I pointed out before, this is frequently a silent factor for infertility.

ECTOPIC PREGNANCY

Lecture by Howard Balin, M. D.

February 19, 1966

It is best to define ectopic pregnancy as a faulty implantation of the ovum outside the endometrial cavity. I think one should not be loose with this term; recall what ectopic means — that is, a location other than in the normal site.

Frequently we hear synonyms for ectopic pregnancy; one of the most popular is extra-uterine, but indeed one should realize that there are sites of implantation inside the uterus itself that are considered ectopic. One of these is in the cornua of the uterus or interstitial portions of the tube, this indeed is inside the uterus. Now other ectopic sites outside the uterus, which are truly uterine are, in the ovary, rarely we have a primary abdominal pregnancy, and occasionally we have a pregnancy that dissects between the leaves of the broad ligament, a so-called intraligamentous ectopic pregnancy.

I think for an understanding of the great complexity of symptomatology, you should have some general idea that each of the five sites that are listed here can be primary or secondary. Of course the oviductal pregnancy is the most frequent primary site for an ectopic pregnancy, and the ampullary portion of the fallopian tube houses the oviductal pregnancy most frequently. Occasionally, pregnancy will occur in the infundibular (the most distal) or fimbriated end of the tube. In other instances it will be seen in the isthmial portion of the tube. An ovarian pregnancy to occur, of course, would require the spermatozoa to actually enter the ruptured follicle at the time of ovulation. If one is to confirm this pathologically the ovarian capsule has to be intact, there can be no derangement of the ovarian ligament, and no contract of the ovary with the fallopian tube.

Prior to going into the pathogenesis of oviductal pregnancies we should say something about the true incidence of extra-uterine or oviductal pregnancies. It has been variously clinically estimated that the incidence is somewhere between 1 in 300 of all deliveries and 1 in 200. The fertilized ovum in the tube does not behave much differently than it does inside the uterine cavity. It tries to find, after implantation, a blood supply.

Now although classically we can state that the classic triad of symtomatology for oviductual pregnancy consists of: amenorrhea, abdominal pain, and vaginal bleeding. Abdominal pain is the most frequent symptom of oviductual pregnancy, it occur in about 90% of the instances as one reviews charts retrospectively. Vaginal bleeding, here referred to as irregular vaginal bleeding: not necessarily preceded by a missed menstrual period, occurs in about 85% of patients latter proven by laparotomy to have an oviductual pregnancy. And indeed amenorrhea can only be ascertained in 65% of the instances with certainty. These patients are usually fertile and they are not usually keeping track of their menses exactly. With this said however; the most important single diagnostic factor that you have at your command for the diagnosis of ectopic pregnancy still remains the history (even in our current age of fanciful tests and telescopic instruments.

Your differential diagnosis is indeed important to the patient for it is here that the real art of Gynecology either demonstrates itself or fails miserably. For what you are asked to do is to differentiate between an intra-uterine and an extra-uterine pregnancy in most instances. Threatened abortion then is the most frequent confusing entity found when one considers the possibility of ectopic pregnancy. Second to this is intra-uterine pregnancy with a corpus luteum cyst. Then there is the corpus luteum persistans which may or may not be cystic: indeed this is also a difficult differential diagnosis for the Gynecologist. If one, however, considers several facts in the differential diagnosis, one is helped to some degree. In oviductual pregnancy the irregular bleeding usually occurs earlier than in Threatened Abortion. The pain that is associated with Threatened Abortion is usually colicy in nature and is usually suprapubic in its distribution. The pain associated with oviductal pregnancy is usually sharp and is usually unilateral. Pregnancy tests interestingly enough is not of great aid to the clinician. For recall the pregnancy test being positive or negative is dependant only on the presence of a viable trophoblast, which does not tell you the location of the pregnancy. Now there are other entities which will mimic ectopic pregnancy. One of these is 1) chronic salpingitis; another of these is 2) an ovarian follicular or corpus luteul cyst; another of these is 3) torsion of an ovarian cyst; and another of these is 4) endometriosis.

The first, of course, and the most important again is your history, we will comment on the more sophisticated methods to aid your differential diagnosis, but history is still the most important individual factor that you have in making the diagnosis of ectopic. Laboratory tests we have commented on the pregnancy test as not being reliable or being pathognomonic of ectopic pregnancy, a blood count of course, here primarily in a serial type blood count we are following the patient where you suspect bleeding from the tip of the tube and you would expect progressive anemia also there is culdocentesis, this is a simple office procedure for a Gynecologist. This does cause the patient distress, but not as much as one might suspect. A local anesthesia is usually not necessary. This is important for your diagnosis can be made in the office if you obtain free blood which does not clot after 3 to 4 minutes. Visual techniques through the vagina consist of either incision in the posterior fornix (the so called posterior colpotomy) also called culdotomy; or puncture of the cul-de-sac in the knee-chest position-culdoscope.

Now as regards treatment, I think that the most important facet that you should put down in your notes as far as treatment is prompt diagnosis. Obviously, the treatment for the detectable oviductal pregnancy is excision of the tube in most instances. In cases where you enter early; where the pregnancy is in the infindibular portion of the tube or the pregnancy has been aborted into the peritoneal cavity, if fertility is of prime concern to the patient and her husband the clinician can chance milking the pregnancy from the tube. He, however, gives the patient a higher incidence for a subsequent ectopic pregnancy. Once an oviductal pregnancy has occurred the incidence increases many fold, for the chances go from 1 in 200 (the primary oviductal pregnancy) to 1 in 10. You may find it justibiable in sterility cases. Now occasionally, especially in a repeat oviductal pregnancy if one tube remains it is justifiable to remove the conceptus from the tube and attempt a salpingo-plastic procedure. Indeed this is a courageous type of therapy, and again if one does so in the face of two previous oviductal pregnancies, one has little to offer the patient for the future.

If the tube is to be removed and if the patient's surgical condition allow; not only should you remove the involved tube, but you should also remove the portion of the tube that extends into the uterine cavity, (the interstitial or cornual portion of the tube). For Cornual pregnancies in the stumps of the tube have been reported.

APPENDIX D

COVARIANCE ANALYSES

This gives the complete inputs and outputs of the Covariance Programs.

```
[illegible]ANALYSIS OF COVARIANCE WITH MULTIPLE COVARIATES - VERSION OF APRIL 1,
HEALTH SCIENCES COMPUTING FACILITY, UCLA

PROBLEM CODE.......................FRSTYR
NUMBER OF TREATMENT GROUPS......      4
TOTAL NUMBER OF CASES...........      [illegible]
[illegible]......................     [illegible]
NUMBER OF ENTERING VARIABLES....      2
NUMBER OF VARIABLES ADDED.......      0
INDEX OF THE DEPENDENT VARIABLE.      2
PRINT DATA INPUT................    YES
NUMBER OF VARIABLES NAMED.......      2
USE DATA CARDS OF LAST PROBLEM..
NUMBER OF GROUP DEFINITION CARDS      0
NUMBER OF TRANSGENERATION CARDS.      0
SPECIFIED BCD TAPE NUMBER.......      0
NUMBER OF VARIABLE FORMAT CARDS.      1

THE VARIABLE FORMAT CARDS
              (3X,F2.0,1X,F2.0)

DATA INPUT (LAST VALUE FOR EACH CASE IS TREATMENT GROUP NUMBER)

CASE NUMBER       1
     37.0000      36.0000       1.0000

CASE NUMBER       2
     24.0000      29.0000       1.0000

CASE NUMBER       3
     28.0000      21.0000       1.0000

CASE NUMBER       4
     31.0000      28.0000       1.0000

CASE NUMBER       5
     29.0000      27.0000       1.0000

CASE NUMBER       6
     26.0000      21.0000       1.0000

CASE NUMBER       7
     35.0000      27.0000       1.0000

CASE NUMBER       8
     32.0000      29.0000       1.0000

CASE NUMBER       9
     36.0000      28.0000       1.0000

CASE NUMBER      10
     32.0000      37.0000       1.0000

CASE NUMBER      11
     30.0000      34.0000       1.0000

CASE NUMBER      12
     42.0000      35.0000       1.0000

CASE NUMBER      13
     35.0000      25.0000       1.0000
     27.0000     31.0000      1.0000

CASE NUMBER      15
     30.0000     32.0000      1.0000

CASE NUMBER      16
     [illegible] [illegible]  [illegible]

CASE NUMBER      17
     34.0000     2[illegible].0000      1.0000

CASE NUMBER      18
     31.0000     33.0000      1.0000

CASE NUMBER      19
     25.0000     26.0000      1.0000

CASE NUMBER      20
     24.0000     32.0000      1.0000

CASE NUMBER      21
     31.0000     30.0000      1.0000

CASE NUMBER      22
     33.0000     34.0000      2.0000

CASE NUMBER      23
     31.0000     28.0000      2.0000

CASE NUMBER      24
     24.0000     30.0000      2.0000

CASE NUMBER      25
     28.0000     29.0000      2.0000

CASE NUMBER      26
     34.0000     33.0000      2.0000

CASE NUMBER      27
     30.0000     32.0000      2.0000

CASE NUMBER      28
     25.0000     30.0000      2.0000

CASE NUMBER      29
     20.0000     35.0000      2.0000

CASE NUMBER      30
     27.0000     32.0000      2.0000

CASE NUMBER      31
     33.0000     31.0000      2.0000

CASE NUMBER      32
     30.0000     30.0000      2.0000

CASE NUMBER      33
     27.0000     27.0000      2.0000

CASE NUMBER      34
     39.0000     36.0000      2.0000
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CASE NUMBER     35
     29.0000    34.0000     2.0000

CASE NUMBER     36
     26.0000    24.0000     2.0000

CASE NUMBER     37
     [illegible]    [illegible]     2.0000

CASE NUMBER     38
     25.0000    24.0000     2.0000

CASE NUMBER     39
     27.0000    29.0000     2.0000

CASE NUMBER     40
     33.0000    31.0000     2.0000

CASE NUMBER     41
     32.0000    32.0000     2.0000

CASE NUMBER     42
     40.0000    36.0000     2.0000

CASE NUMBER     43
     23.0000    36.0000     2.0000

CASE NUMBER     44
     26.0000    28.0000     2.0000

CASE NUMBER     45
     34.0000    31.0000     3.0000

CASE NUMBER     46
     37.0000    38.0000     3.0000

CASE NUMBER     47
     31.0000    34.0000     3.0000

CASE NUMBER     48
     14.0000    24.0000     3.0000

CASE NUMBER     49
     30.0000    34.0000     3.0000

CASE NUMBER     50
     19.0000    34.0000     3.0000

CASE NUMBER     51
     33.0000    35.0000     3.0000

CASE NUMBER     52
     24.0000    25.0000     3.0000

CASE NUMBER     53
     23.0000    26.0000     3.0000

CASE NUMBER     54
     30.0000    28.0000     3.0000

CASE NUMBER     55
     30.0000    24.0000     3.0000
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      34.0000         31.0000         3.0000
CASE NUMBER           57
      34.0000         35.0000         3.0000
CASE NUMBER           58
      24.0000         24.0000         3.0000
CASE NUMBER           59
      29.0000         31.0000         3.0000
CASE NUMBER           60
      23.0000         32.0000         3.0000
CASE NUMBER           61
      29.0000         25.0000         3.0000
CASE NUMBER           62
      35.0000         38.0000         3.0000
CASE NUMBER           63
      19.0000         24.0000         3.0000
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CASE NUMBER           65
      32.0000         30.0000         3.0000
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CASE NUMBER           67
      27.0000         31.0000         3.0000
CASE NUMBER           68
      35.0000         30.0000         3.0000
CASE NUMBER           69
      26.0000         28.0000         4.0000
CASE NUMBER           70
      37.0000         23.0000         4.0000
CASE NUMBER           71
      33.0000         27.0000         4.0000
CASE NUMBER           72
      37.0000         32.0000         4.0000
CASE NUMBER           73
      25.0000         25.0000         4.0000
CASE NUMBER           74
      33.0000         38.0000         4.0000
CASE NUMBER           75
      29.0000         40.0000         4.0000
CASE NUMBER           76
      28.0000         30.0000         4.0000
```

```
     21.0000       22.0000       4.0000

CASE NUMBER        78
     22.0000       32.0000       4.0000

CASE NUMBER        79
     [illegible]   [illegible]   4.0000

CASE NUMBER        80
     30.0000       21.0000       4.0000

CASE NUMBER        81
     28.0000       31.0000       4.0000

CASE NUMBER        82
     22.0000       24.0000       4.0000

CASE NUMBER        83
     25.0000       26.0000       4.0000

CASE NUMBER        84
     27.0000       33.0000       4.0000

CASE NUMBER        85
     33.0000       33.0000       4.0000

CASE NUMBER        86
     28.0000       21.0000       4.0000

CASE NUMBER        87
     42.0000       29.0000       4.0000

CASE NUMBER        88
     23.0000       21.0000       4.0000

CASE NUMBER        89
     25.0000       29.0000       4.0000

CASE NUMBER        90
     34.0000       29.0000       4.0000

CASE NUMBER        91
     32.0000       32.0000       4.0000



VARIABLE MEANS FOR EACH GROUP



GROUP NO.  1

(PRE        31.7143) (POST       29.4286) (

GROUP NO.  2

(PRE        29.2609) (POST       30.8696) (
[illegible]

( [illegible]      2.[illegible]) (POST      [illegible].0625) (

[illegible]        2.[illegible]                  .[illegible] (

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR TOTAL.

                  PRE              POST
PRE           2660.1875         711.9375
POST           711.9375        1762.3625

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR TREATMENT.

                  PRE              POST
PRE            109.1875         -23.6875
POST           -23.6875          22.9375

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR ERROR.

                  PRE              POST
PRE           2551.0000         735.6250
POST           735.6250        1658.6250

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR TOTAL.

                  PRE
PRE              0.0004

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR TREATMENT.

                  PRE
PRE              0.0092
```

```
                                ANALYSIS OF COVARIANCE TABLE
*******************************************************************************************************
*           I        I                  I                   I                   I       I
*           I        I                  I   SUM-SQUARES     I   SUM-SQUARES     I       I
*  SOURCE   I   DF   I        YY        I     (DUE)         I    (ADJUST)       I   DF  I  MEAN-SQUARE
*           I        I                  I                   I                   I       I
*------------------------------------------------------------------------------------------------------
*           I        I                  I                   I                   I       I
* TREATMENT I        I                  I                   I                   I       I
* (BETWEEN) I    3   I      93.9375     I                   I                   I       I
*           I        I                  I                   I                   I       I
*------------------------------------------------------------------------------------------------------
*           I        I                  I                   I                   I       I
*     ERROR I        I                  I                   I                   I       I
*  (WITHIN) I   87   I    1658.6250     I      230.1761     I     1428.4487     I   86  I      16.
*           I        I                  I                   I                   I       I
*------------------------------------------------------------------------------------------------------
*           I        I                  I                   I                   I       I
* TREATMENT I        I                  I                   I                   I       I
* + ERROR   I        I                  I                   I                   I       I
*   (TOTAL) I   90   I    1752.5625     I      206.0228     I     1546.5396     I   89  I
*           I        I                  I                   I                   I       I
*------------------------------------------------------------------------------------------------------
*           I        I                  I                   I                   I       I
*DIFFERENCE FOR TESTING ADJUSTED TREATMENT MEANS....I     118.0908     I    3  I      39.
*           I        I                  I                   I                   I       I
*******************************************************************************************************


NULL HYPOTHESIS. NO DIFFERENCE AMONG TREATMENTS AFTER
                 ADJUSTING WITH COVARIATES.


                 F(    3,   86)=    2.570
```

N.S. (5% level)

```
TABLE OF COEFFICIENTS


                TREATMENT (BETWEEN)
        COEFFICIENT


PRE         -0.2169


TABLE OF COEFFICIENTS,STANDARD ERRORS AND COMPUTED T-VALUES
```

```
              [illegible]

TABLE OF COEFFICIENTS,STANDARD ERRORS AND COMPUTED T-VALUES

               [illegible] ( [illegible] )
        COEFFICIENT    STAND. ERROR        T-VALUE

PRE            0.3129         0.0841         3.7226

TABLE OF COEFFICIENTS,STANDARD ERRORS AND COMPUTED T-VALUES



            TREATMENT+ERROR (TOTAL)
        COEFFICIENT    STAND. ERROR        T-VALUE

PRE            0.2894         0.0840         3.4435
 TABLE OF ADJUSTED MEANS AND STANDARD ERRORS

 TREATMENT  TREATMENT     ADJUSTED     SE ADJUSTED
   NO.        MEAN          MEAN          MEAN

    1       29.4286       28.8062        0.9049
    2       30.8696       31.0148        0.8507
    3       30.6250       30.8650        0.8344
    4       28.3478       28.5203        0.8511
```

```
BMD04V - ANALYSIS OF COVARIANCE WITH MULTIPLE COVARIATES - [illegible]
HEALTH SCIENCES COMPUTING FACILITY, UCLA

PROBLEM CODE........................SECUYR
NUMBER OF TREATMENT GROUPS.......      4
TOTAL NUMBER OF CASES............     27
[illegible]......................      1
NUMBER OF ENTERING VARIABLES.....      2
NUMBER OF VARIABLES ADDED........      0
NUMBER OF THE DEPENDENT VARIABLE.      2
PRINT DATA INPUT.................    YES
NUMBER OF VARIABLES [illegible]..      2
USE DATA CARDS OF LAST PROBLEM..
NUMBER OF GROUP DEFINITION CARDS       0
NUMBER OF TRANSGENERATION CARDS.       0
SPECIFIED BCD TAPE NUMBER........      0
NUMBER OF VARIABLE FORMAT CARDS.       1

THE VARIABLE FORMAT CARDS
              (3X,F2.0,1X,F2.0)

DATA INPUT (LAST VALUE FOR EACH CASE IS TREATMENT GROUP NUMBER)

CASE NUMBER      1
     34.0000    29.0000     1.0000

CASE NUMBER      2
     29.0000    33.0000     1.0000

CASE NUMBER      3
     36.0000    30.0000     1.0000

CASE NUMBER      4
     27.0000    36.0000     1.0000

CASE NUMBER      5
     30.0000    31.0000     1.0000

CASE NUMBER      6
     35.0000    34.0000     1.0000

CASE NUMBER      7
     34.0000    31.0000     1.0000

CASE NUMBER      8
     30.0000    20.0000     1.0000

CASE NUMBER      9
     33.0000    31.0000     1.0000

CASE NUMBER     10
     34.0000    31.0000     2.0000

CASE NUMBER     11


     26.0000    21.0000     2.0000
CASE NUMBER     12
     24.0000    32.0000     2.0000
```

```
    [illegible].0000     25.0000      2.0000

CASE NUMBER        14
      20.0000     25.0000      2.0000

CASE NUMBER        15
      26.0000     25.0000      2.0000

CASE NUMBER        16
      20.0000     30.0000      2.0000

CASE NUMBER        17
      26.0000     29.0000      2.0000

CASE NUMBER        18
      37.0000     39.0000      2.0000

CASE NUMBER        19
      24.0000     27.0000      2.0000
```

```
CASE NUMBER      20
     27.0000     26.0000       3.0000
CASE NUMBER      21
     25.0000     37.0000.      3.0000
CASE NUMBER      22
     38.0000     32.0000       3.0000
CASE NUMBER      23
     32.0000     30.0000       3.0000
CASE NUMBER      24
     28.0000     32.0000       3.0000
CASE NUMBER      25
     24.0000     24.0000       3.0000
CASE NUMBER      26
     33.0000     30.0000       3.0000
CASE NUMBER      27
     37.0000     34.0000       3.0000
CASE NUMBER      28
     29.0000     23.0000       4.0000
CASE NUMBER      29
     27.0000     30.0000       4.0000
CASE NUMBER      30
     20.0000     25.0000       4.0000
CASE NUMBER      31
     31.0000     36.0000       4.0000
CASE NUMBER      32
     30.0000     32.0000       4.0000
CASE NUMBER      33
     40.0000     26.0000       4.0000
CASE NUMBER      34
     28.0000     19.0000       4.0000
```

```
CASE NUMBER      31
     31.0000     [illegible]      4.0000

CASE NUMBER      32
     30.0000     32.0000      4.0000

CASE NUMBER      33
     [illegible]

CASE NUMBER      34
     [illegible]     1[illegible].0000      4.0000

CASE NUMBER      35
     31.0000     71.0000      4.0000

CASE NUMBER      36
     35.0000     28.0000      4.0000

CASE NUMBER      37
     28.0000     28.0000      4.0000


VARIABLE MEANS FOR EACH GROUP


GROUP NO.  1

(PRE        32.0000) (POST        30.4444) (

GROUP NO.  2

(PRE        27.3000) (POST        28.5000) (

GROUP NO.  3

(PRE        30.7500) (POST        29.8750) (
(PRE        29.9060) (POST       26.0000) (

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR TOTAL.


                  PRE            POST
PRE            769.5703       230.2461
POST           230.2461       893.6758

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR TREATMENT.


                  PRE            POST
PRE            113.0664        46.1953
POST            46.1953        74.4766

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR ERROR.


                  PRE            POST
PRE            656.5039       184.0508
POST           184.0508       819.1992

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR TOTAL.

                  PRE
PRE               0.0010

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR TREATMENT.

                  PRE
PRE               0.0088

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR ERROR.

                  PRE
PRE               0.0012
```

```
                         ANALYSIS OF COVARIANCE TABLE
*******************************************************************************
*            I        I                 I              I              I      I               *
*            I        I                 I  SUM-SQUARES I  SUM-SQUARES I      I               *
*   SOURCE   I   DF   I        YY       I     (DUE)    I    (ABOUT)   I  DF  I  MEAN-SQUARE  *
*            I        I                 I              I              I      I               *
*----------------------------------------------------------------------------------------------*
*            I        I                 I              I              I      I               *
* TREATMENT  I        I                 I              I              I      I               *
* (BETWEEN)  I     3  I        74.4766  I              I              I      I               *
*            I        I                 I              I              I      I               *
*----------------------------------------------------------------------------------------------*
*            I        I                 I              I              I      I               *
*    ERROR   I        I                 I              I              I      I               *
*  (WITHIN)  I    33  I       819.1992  I      39.5499 I     779.6492 I   32 I      24.3640  *
*            I        I                 I              I              I      I               *
*----------------------------------------------------------------------------------------------*
*            I        I                 I              I              I      I               *
* TREATMENT  I        I                 I              I              I      I               *
* + ERROR    I        I                 I              I              I      I               *
*   (TOTAL)  I    36  I       893.6758  I      54.6770 I     838.9985 I   35 I               *
*            I        I                 I              I              I      I               *
*----------------------------------------------------------------------------------------------*
*            I        I                 I              I              I      I               *
*DIFFERENCE FOR TESTING ADJUSTED TREATMENT MEANS....I       59.3494 I    3 I      19.7831  *
*            I        I                 I              I              I      I               *
*******************************************************************************

NULL HYPOTHESIS. NO DIFFERENCE AMONG TREATMENTS AFTER
                 ADJUSTING WITH COVARIATES
```

```
                    F(      3,    32)=    0.612       N.S. (5% level)


TABLE OF COEFFICIENTS

                         TREATMENT (BETWEEN)
             COEFFICIENT

PRE               0.4086

TABLE OF COEFFICIENTS,STANDARD ERRORS AND COMPUTED T-VALUES

                          ERROR (WITHIN)
             COEFFICIENT   STAND. ERROR       T-VALUE

PRE               0.2149        0.1687          1.2741

TABLE OF COEFFICIENTS,STANDARD ERRORS AND COMPUTED T-VALUES



                    TREATMENT+ERROR (TOTAL)
             COEFFICIENT   STAND. ERROR       T-VALUE

PRE               0.2375        0.1572          1.5103
```

```
TABLE OF ADJUSTED MEANS AND STANDARD ERRORS

TREATMENT  TREATMENT     ADJUSTED     SE ADJUSTED
  NO.        MEAN          MEAN          MEAN

    1         30.4444      29.9914        1.6833
    2         28.5000      29.0569        1.6210
    3         29.8750      29.6906        1.7511
    4         26.8000      26.7982        1.5609
```

```
[illegible] ANALYSIS OF COVARIANCE- MULTIPLE COVARIATES - VERSION OF APRIL 1, 1965
HEALTH SCIENCES COMPUTING FACILITY, UCLA

PROBLEM CODE.........................TOTAL
NUMBER OF TREATMENT GROUPS.......      4
[illegible]................      12
[illegible]                          1
[illegible] VARIABLES....            2
[illegible].......                   0
[illegible]                          2
[illegible]..................      YES
NUMBER OF VARIABLES [illegible]........  2
USE DATA CARDS OF LAST PROBLEM..
NUMBER OF GROUP DEFINITION CARDS     0
NUMBER OF TRANSGENERATION CARDS.     0
SPECIFIED BCD TAPE NUMBER........    0
NUMBER OF VARIABLE FORMAT CARDS.     1

THE VARIABLE FORMAT CARDS
          (3X,F2.0,1X,F2.0)

DATA INPUT (LAST VALUE FOR EACH CASE IS TREATMENT GROUP NUMBER)

CASE NUMBER        1
     37.0000      36.0000      1.0000

CASE NUMBER        2
     24.0000      29.0000      1.0000

CASE NUMBER        3
     29.0000      21.0000      1.0000

CASE NUMBER        4
     31.0000      26.0000      1.0000

CASE NUMBER        5
     29.0000      27.0000      1.0000

CASE NUMBER        6
     26.0000      21.0000      1.0000

CASE NUMBER        7
     35.0000      27.0000      1.0000

CASE NUMBER        8
     32.0000      29.0000      1.0000

CASE NUMBER        9
     36.0000      28.0000      1.0000

CASE NUMBER       10
     32.0000      37.0000      1.0000

CASE NUMBER       11
     30.0000      34.0000      1.0000

CASE NUMBER       12
     42.0000      35.0000      1.0000

CASE NUMBER       13
     35.0000      25.0000      1.0000
```

```
      [illegible]     31.0000        1.0000

CASE NUMBER        15
      30.0000       32.0000        1.0000

CASE NUMBER        16
      32.0000       29.0000        1.0000

CASE NUMBER        17
      34.0000       26.0000        1.0000

CASE NUMBER        18
      31.0000       33.0000        1.0000

CASE NUMBER        19
      25.0000       23.0000        1.0000

CASE NUMBER        20
      28.0000       32.0000        1.0000

CASE NUMBER        21
      31.0000       30.0000        1.0000

CASE NUMBER        22
      34.0000       29.0000        1.0000

CASE NUMBER        23
      29.0000       33.0000        1.0000

CASE NUMBER        24
      36.0000       30.0000        1.0000

CASE NUMBER        25
      27.0000       35.0000        1.0000

CASE NUMBER        26
      30.0000       31.0000        1.0000

CASE NUMBER        27
      35.0000       34.0000        1.0000

CASE NUMBER        28
      34.0000       31.0000        1.0000

CASE NUMBER        29
      30.0000       20.0000        1.0000

CASE NUMBER        30
      33.0000       31.0000        1.0000

CASE NUMBER        31
      33.0000       34.0000        2.0000

CASE NUMBER        32
      31.0000       28.0000        2.0000

CASE NUMBER        33
      24.0000       30.0000        2.0000

CASE NUMBER        34
      28.0000       29.0000        2.0000
```

7

```
CASE NUMBER        35
CASE NUMBER     35
      36.0000     25.0000       2.0000
CASE NUMBER     36
      30.0000     32.0000       2.0000
CASE NUMBER     37
[illegible]
CASE NUMBER     38
      [illegible]     35.0000       2.0000
CASE NUMBER     39
      27.0000     32.0000       2.0000
CASE NUMBER     40
      35.0000     31.0000       2.0000
CASE NUMBER     41
      30.0000     30.0000       2.0000
CASE NUMBER     42
      27.0000     27.0000       2.0000
CASE NUMBER     43
      39.0000     36.0000       2.0000
CASE NUMBER     44
      29.0000     32.0000       2.0000
CASE NUMBER     45
      26.0000     24.0000       2.0000
CASE NUMBER     46
      31.0000     31.0000       2.0000
CASE NUMBER     47
      25.0000     24.0000       2.0000
CASE NUMBER     48
      27.0000     29.0000       2.0000
CASE NUMBER     49
      33.0000     31.0000       2.0000
CASE NUMBER     50
      32.0000     32.0000       2.0000
CASE NUMBER     51
      40.0000     36.0000       2.0000
CASE NUMBER     52
      23.0000     36.0000       2.0000
CASE NUMBER     53
      26.0000     28.0000       2.0000
CASE NUMBER     54
      34.0000     31.0000       2.0000
CASE NUMBER     55
      25.0000     21.0000       2.0000
```

```
       [illegible]     32.0000       2.0000
CASE NUMBER       57
       36.0000      25.0000       2.0000
CASE NUMBER       58
       27.0000      25.0000       2.0000
CASE NUMBER       59
       26.0000      25.0000       2.0000
CASE NUMBER       60
       20.0000      30.0000       2.0000
CASE NUMBER       61
       25.0000      29.0000       2.0000
CASE NUMBER       62
       37.0000      39.0000       2.0000
CASE NUMBER       63
       24.0000      27.0000       2.0000
CASE NUMBER       64
       34.0000      31.0000       3.0000
CASE NUMBER       65
       37.0000      38.0000       3.0000
CASE NUMBER       66
       31.0000      34.0000       3.0000
CASE NUMBER       67
       14.0000      24.0000       3.0000
CASE NUMBER       68
       30.0000      34.0000       3.0000
CASE NUMBER       69
       19.0000      34.0000       3.0000
CASE NUMBER       70
       33.0000      35.0000       3.0000
CASE NUMBER       71
       24.0000      25.0000       3.0000
CASE NUMBER       72
       23.0000      26.0000       3.0000
CASE NUMBER       73
       30.0000      28.0000       3.0000
CASE NUMBER       74
       30.0000      24.0000       3.0000
CASE NUMBER       75
       33.0000      31.0000       3.0000
CASE NUMBER       76
       38.0000      33.0000       3.0000
```

```
CASE NUMBER      77
     26.0000     29.0000      3.0000
CASE NUMBER      78
     24.0000     31.0000      3.0000
CASE NUMBER      79
     2[illegible].0000     32.0000      3.0000
CASE NUMBER      80
     23.0000     25.0000      3.0000
CASE NUMBER      81
     35.0000     38.0000      3.0000
CASE NUMBER      82
     19.0000     24.0000      3.0000
CASE NUMBER      83
     29.0000     37.0000      3.0000
CASE NUMBER      84
     32.0000     30.0000      3.0000
CASE NUMBER      85
     31.0000     31.0000      3.0000
CASE NUMBER      86
     27.0000     31.0000      3.0000
CASE NUMBER      87
     35.0000     30.0000      3.0000
CASE NUMBER      88
     29.0000     20.0000      3.0000
CASE NUMBER      89
     25.0000     37.0000      3.0000
CASE NUMBER      90
     38.0000     32.0000      3.0000
CASE NUMBER      91
     32.0000     30.0000      3.0000
CASE NUMBER      92
     28.0000     32.0000      3.0000
CASE NUMBER      93
     24.0000     24.0000      3.0000
CASE NUMBER      94
     33.0000     30.0000      3.0000
CASE NUMBER      95
     37.0000     34.0000      3.0000
CASE NUMBER      96
     26.0000     28.0000      4.0000
CASE NUMBER      97
     37.0000     23.0000      4.0000
```

```
      33.0000      27.0000       4.0000

CASE NUMBER    99
      37.0000      32.0000       4.0000

CASE NUMBER    100
      [illegible]  [illegible]   [illegible]

CASE NUMBER    101
      28.0000      [illegible]   4.0000

CASE NUMBER    102
      29.0000      40.0000       4.0000

CASE NUMBER    103
      28.0000      30.0000       4.0000

CASE NUMBER    104
      31.0000      22.0000       4.0000

CASE NUMBER    105
      22.0000      32.0000       4.0000

CASE NUMBER    106
      21.0000      26.0000       4.0000

CASE NUMBER    107
      30.0000      21.0000       4.0000

CASE NUMBER    108
      28.0000      31.0000       4.0000

CASE NUMBER    109
      22.0000      24.0000       4.0000

CASE NUMBER    110
      25.0000      26.0000       4.0000

CASE NUMBER    111
      27.0000      33.0000       4.0000

CASE NUMBER    112
      33.0000      33.0000       4.0000

CASE NUMBER    113
      28.0000      21.0000       4.0000

CASE NUMBER    114
      42.0000      29.0000       4.0000

CASE NUMBER    115
      23.0000      21.0000       4.0000

CASE NUMBER    116
      25.0000      29.0000       4.0000

CASE NUMBER    117
      34.0000      29.0000       4.0000

CASE NUMBER    118
      32.0000      32.0000       4.0000
```

```
     25.0000        29.0000       3.0000
CASE NUMBER    119
     2[illegible].0000        23.0000       4.0000

CASE NUMBER    120
     27.0000        30.0000       4.0000

CASE NUMBER    121
     2[illegible].0000        2[illegible].0000       4.0000

CASE NUMBER    122
     31.0000        35.0000       4.0000

CASE NUMBER    123
     30.0000        32.0000       4.0000

CASE NUMBER    124
     40.0000        26.0000       4.0000

CASE NUMBER    125
     25.0000        19.0000       4.0000

CASE NUMBER    126
     31.0000        21.0000       4.0000

CASE NUMBER    127
     35.0000        28.0000       4.0000

CASE NUMBER    128
     28.0000        28.0000       4.0000


VARIABLE MEANS FOR EACH GROUP


GROUP NO.  1

(PRE          31.8000) (POST        29.7333) (

GROUP NO.  2

(PRE          28.6667) (POST        30.1515) (

GROUP NO.  3

(PRE          29.4062) (POST        30.4375) (

GROUP NO.  4

(PRE          29.3939) (POST        27.8788) (

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR TOTAL.
```

```
                 PRE             POST
PRE          3430.4375         937.6875
POST          937.6875        2673.8125

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR TREATMENT.


                 PRE             POST
PRE           172.6250          -0.3750
POST           -0.3750         130.2500

SUMS OF SQUARES AND CROSS PRODUCT MATRIX
FOR ERROR.


                 PRE             POST
PRE          3257.8125         938.0625
POST          938.0625        2543.5625

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR TOTAL.


                 PRE
PRE               0.0003

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR TREATMENT.


                 PRE
PRE               0.0058

INVERSE OF THE COVARIATES
CROSS PRODUCT MATRIX
FOR ERROR.


                 PRE
PRE               0.0003
```

```
                              ANALYSIS OF COVARIANCE TABLE.

*******************************************************************************************
*          I        I                  I                  I                  I      I
*          I        I                  I  SUM-SQUARES     I  SUM-SQUARES     I      I
*  SOURCE  I   DF   I        YY        I    (DUE)         I   (ERROR)        I  DF  I  MEAN-SQ.  *
*          I        I                  I                  I                  I      I
*-----------------------------------------------------------------------------------------*
*          I        I                  I                  I                  I      I
* TREATMENT I       I                  I                  I                  I      I
* (BETWEEN) I    3  I      130.2500    I                  I                  I      I
*          I        I                  I                  I                  I      I
*-----------------------------------------------------------------------------------------*
*          I        I                  I                  I                  I      I
*     ERROR I       I                  I                  I                  I      I
*  (WITHIN) I  124  I     2543.5625    I     270.1079     I     2273.4546    I  123 I  18.4[illegible] *
*          I        I                  I                  I                  I      I
*-----------------------------------------------------------------------------------------*
*          I        I                  I                  I                  I      I
* TREATMENT I       I                  I                  I                  I      I
* + ERROR  I        I                  I                  I                  I      I
*   (TOTAL) I  127  I     2673.8125    I     256.3105     I     2417.5020    I  126 I
*          I        I                  I                  I                  I      I
*-----------------------------------------------------------------------------------------*
*          I        I                  I                  I                  I      I
*DIFFERENCE FOR TESTING ADJUSTED TREATMENT MEANS....I     144.0474    I    3 I  48.01[illegible] *
*          I        I                  I                  I                  I      I
*******************************************************************************************


NULL HYPOTHESIS. NO DIFFERENCE AMONG TREATMENTS AFTER
                 ADJUSTING WITH COVARIATES.


                 F(    3,  123)=   2.598        N.S (5% level)


TABLE OF COEFFICIENTS

                 TREATMENT (BETWEEN)
           COEFFICIENT

PRE          -0.0022
```

```
                    F(    3,  123)=   2.098
```

N.S (5% level)

```
TABLE OF COEFFICIENTS

                  TREATMENT (BETWEEN)
         COEFFICIENT

PRE           -0.0022

TABLE OF COEFFICIENTS,STANDARD ERRORS AND COMPUTED T-VALUES

                  ERROR (WITHIN)
         COEFFICIENT   STAND. ERROR        T-VALUE

PRE           0.2879         0.0753          3.8228

TABLE OF COEFFICIENTS,STANDARD ERRORS AND COMPUTED T-VALUES


              TREATMENT+ERROR (TOTAL)
         COEFFICIENT   STAND. ERROR        T-VALUE

PRE           0.2733         0.0748          3.6550

TABLE OF ADJUSTED MEANS AND STANDARD ERRORS

TREATMENT  TREATMENT     ADJUSTED     SE ADJUSTED
  NO.        MEAN          MEAN          MEAN

    1        29.7333       29.1498        0.7996
    2        30.1515       30.4702        0.7530
    3        30.4375       30.5432        0.7605
    4        27.8788       27.9880        0.7489
```